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BROOKS/SOUTH/RUSSELL INTERSECTION PROJECT
City of Missoula, Montana

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Submitted Pursuant to 40 U.S.C. 4332(2)(c)
and
Section 2-3-104, 75-1-201 MCA

State of Montana
DEPARTMENT OF TRANSPORTATION
and the
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ENVIRONMENTAL ASSESSMENT
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for

Brooks/South/Russell Intersection, City of Missoula, Montana

Submitted Pursuant to 42 U.S.C. 4332 (2)(c)
and
Section 2-3-104, 75-1-201 MCA

by the

State of Montana
Department of Transportation
Environmental Services

and the

U.S. Department of Transportation
Federal Highway Administration, Region 8

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Submitted by:

Date

Montana Department of Transportation
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SUMMARY

The proposed Brooks/South/Russell Intersection Project is located within the City and County of Missoula, Montana. Brooks Street, which serves as an city arterial of U.S. 93, bisects the intersection of Russell and South from the southwest to the northeast, creating a six-way approach configuration with restricted turning movements. This intersection has been a source of frustration for area commuters, pedestrians and bicyclists for many years, creating delays and bottlenecks, particularly during peak traffic periods. Localized vehicle emissions produced from engine idling, historically often exceeded federal air quality standards for carbon monoxide (CO) and particulate matter (PM_{10}) at this intersection.

This Environmental Assessment (EA) has been prepared to address the proposal to make improvements to the Brooks/South/Russell Intersection. The Montana Department of Transportation (MDT) is administering the project and the Federal Highway Administration (FHWA) is the lead agency.

The need for the proposed project is to improve traffic flow, relieve congestion, and reduce idling times at the intersection and to maintain federal air quality standards in the vicinity of the intersection. An extensive alternatives development and evaluation process was conducted between October 1993 and May 1997 to identify the alternative that would best meet the project purpose and balance environmental, engineering and economic factors. Numerous alternatives were formulated, evaluated, and rejected on the basis of limited public acceptance. These included: (1) roundabout; (2) overpass along Brooks Street, with changes in traffic configuration at Kent/Regent/Brooks and Catlin/Fairview/Brooks; (3) underpass along Brooks Street, with the same changes in traffic configuration as indicated for the overpass; and (4) at grade realignment of South Avenue options that widen rights-of-way and routes traffic across existing properties. The alternatives that are evaluated in detail within this EA include a range of options to realign South Avenue, at-grade, with varying amounts of new right-of-way (i.e., range = 0.36 - 1.37 hectares or 0.89 - 3.4 acres), traffic signals, and property impacts.

The Preferred Alternative is the South Avenue Realignment that uses existing rights-of-way to the maximum extent routing traffic away from South Avenue to avoid crossing the Brooks and Russell intersection. The Brooks and Russell Streets intersection would continue to function as it does now. South Avenue eastbound traffic would be routed Brooks Street via Russell Street. Westbound traffic on South Avenue would be routed to Sussex Avenue and could access Brooks Street southbound north of the existing intersection.

An extensive impact analysis was conducted for noise, air, cultural, groundwater, hazardous materials, land use, socioeconomics, and other resources. The preferred alternative would have no adverse effect on noise, air quality, biological resources, water resources, soil and geology, or cultural resources. Probable benefits of the project include a reduction of congestion and delays at the intersection. Federal air quality standards at the Brooks/South/Russell intersection have been achieved for the past year through traffic demand management which has been implemented by the City of Missoula for the past several years.

The following impacts to environmental resources have been identified through the EA for Brooks/South/Russell intersection:

- minor surface disturbance due to construction
- displacement of two commercial properties
- right-of-way acquisition along several other properties, and
- new traffic signals and circulation in the surface streets surrounding the intersection.

The City of Missoula shall approve plans and specifications and monitor construction. MDT, with input from the City of Missoula, shall direct all activities performed by the construction contractor(s). Within these measures, references to MDT include either MDT representative(s) or MDT's engineering and construction contractor(s). Following construction, landscaping and sidewalks would be constructed along the entire route.

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CHAPTER 1 - PURPOSE AND NEED FOR ACTION

CHAPTER 1 - PURPOSE AND NEED FOR ACTION

OVERVIEW OF THE PROJECT AREA

The proposed project is located at the intersection of three arterial roadways in the City of Missoula, Montana (Figures 1-1 and 1-2). Brooks Street, South Avenue, and Russell St. intersect at the northwest corner of the Missoula County Fairgrounds in south central Missoula. The location of this intersection, which for purposes of this Environmental Assessment (EA) is referred to as Brooks/South/Russell, is shown on Figure 1-2.

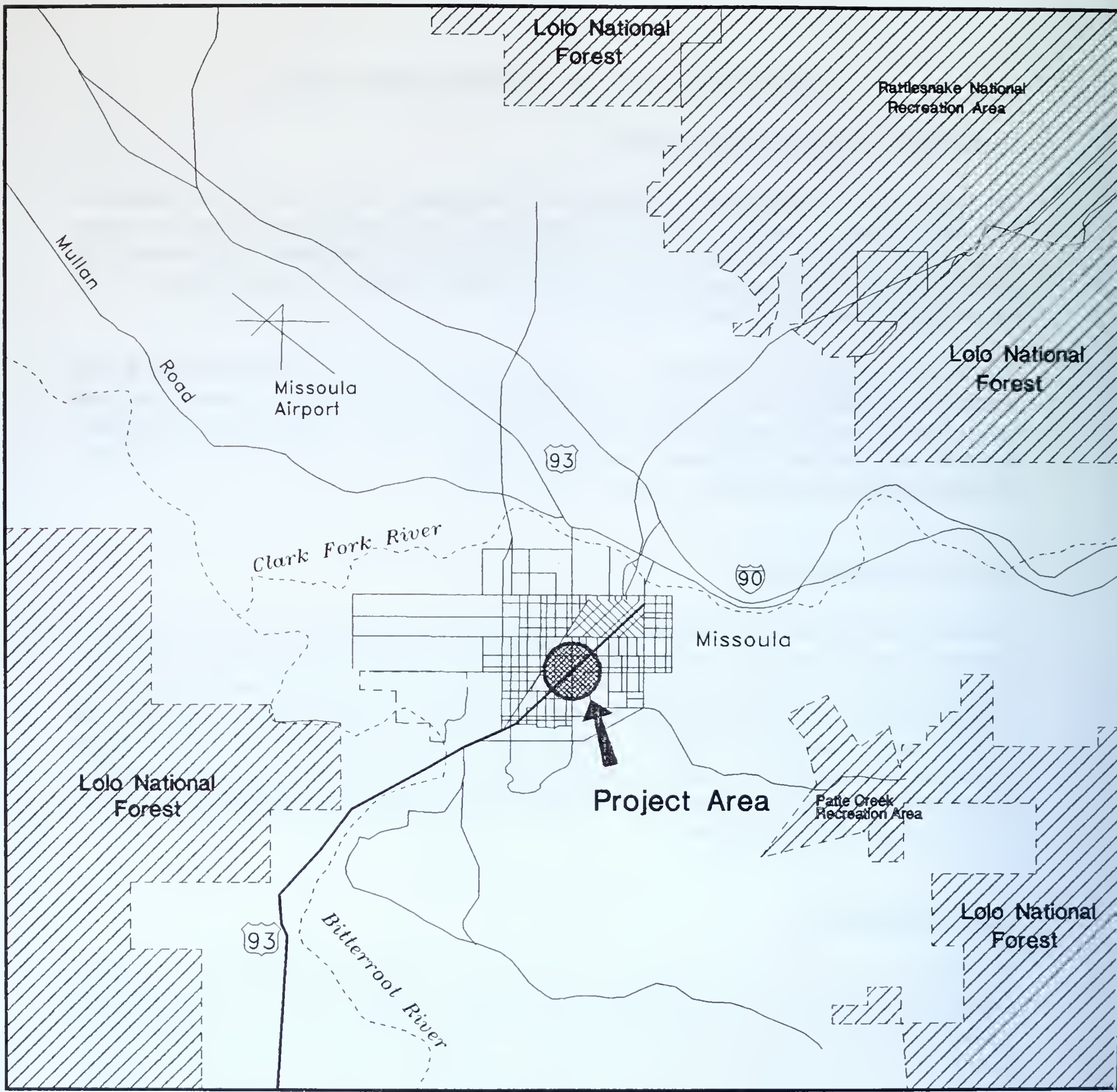
Brooks St., a segment of U.S. 93(A), is a major connecting link through Missoula and it runs southwest-northeast from Reserve St. (U.S. 93) to Higgins Ave. South Ave. is a connecting link east to west through the City from its west terminus near McCauley Butte to its east terminus at Bannack Court at the University Golf Course. Russell St. is a major connecting link north-south from the Burlington Northern railroad tracks north of I-90 to 39th St.

PROJECT DESCRIPTION

Preliminary design would be completed if the proposed action is approved. Final design decisions have not been made, and engineered locations of design features described in this section have not been determined. Constructing these improvements would use both local and federal funding. The federal contribution to the funding of the Brooks/South/Russell Intersection Project (Project) would be administered through the Federal Highway Administration (FHWA), with the Montana Department of Transportation (MDT) overseeing selection of final alternative and construction. The impact analysis presented in Chapter 3 is based on the proposed action and alternatives and the no-action alternative described below.

Project Components

The Project, depending on the alternative selected, would include the construction of new road surface and reconstruction of existing streets to effectively realign South Ave. so that eastbound traffic is diverted via a new route that is south of the existing intersection to access Brooks St. (or Russell St.). Those vehicles east of the intersection westbound on South Ave. likewise may access Brooks St. via a new route north of the existing intersection. The project design is intended to improve traffic flow and reduce carbon monoxide levels in the vicinity of the Brooks/South/Russell intersection and to improve traffic circulation and access to businesses within downtown Missoula. For further detail on the proposed South Ave. Realignment alternatives, please refer to Chapter 2, Project Alternatives and Appendix A. Other project components include road widening, several new traffic signals, free right turns southbound and northbound from Russell St. to South Ave., bicycle and pedestrian access, and landscaping.



PROJECT LOCATION

Figure 1-1

VICINITY MAP

PROJECT STUDY AREA

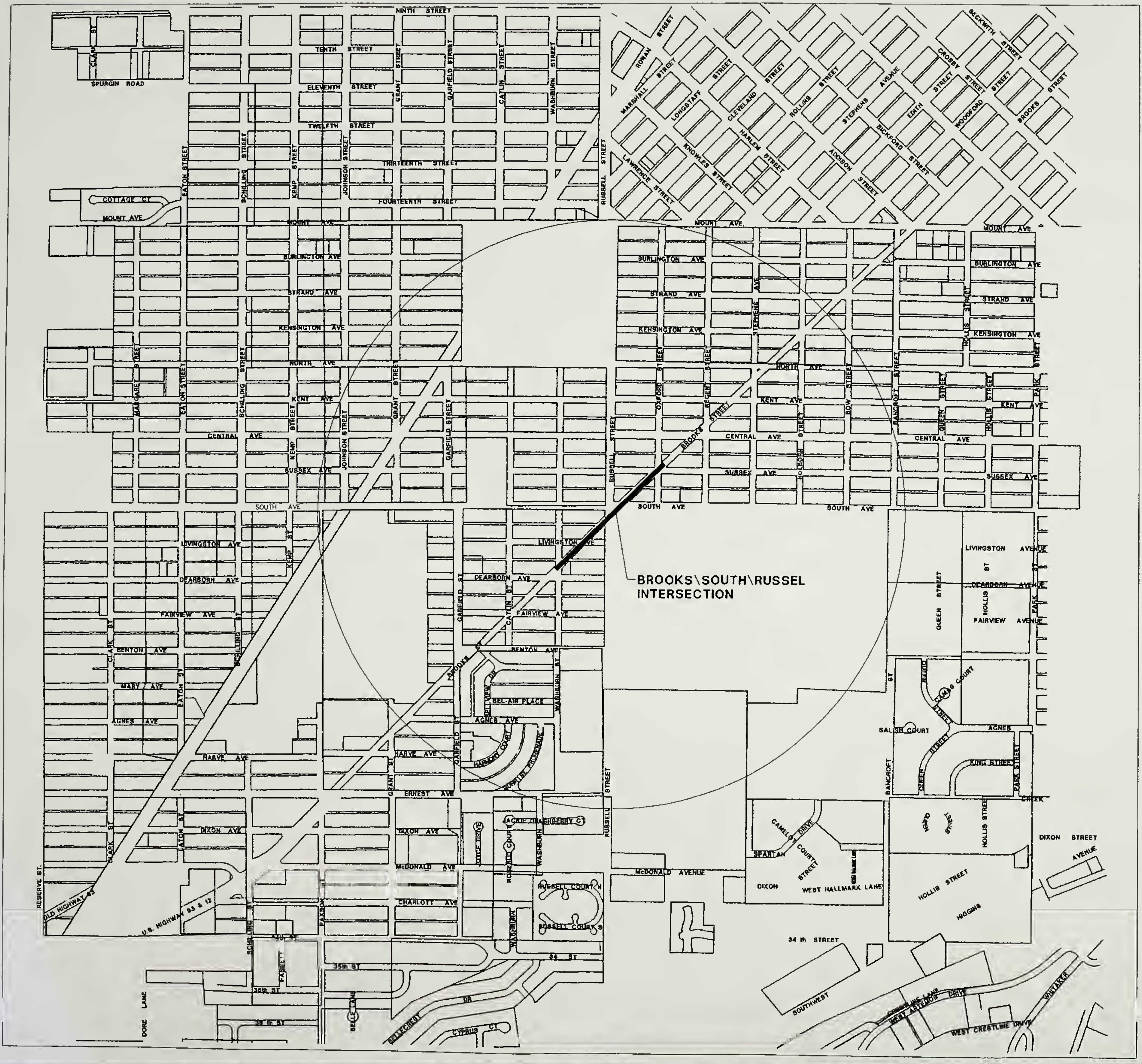


Figure 1-2

Major Design Features

Roadway

The proposed action would include constructing a new road surface on South Ave. west of the intersection from Garfield St. to Brooks St., and reconstructing portions of South Ave., Brooks St., Russell St., and the other side streets that would be variously affected depending on the selected alternatives. A continuous curb, gutter, sidewalks and associated drainage improvements would be provided around the intersection and along the new roads and pedestrian and bicycle walkways.

The existing road grade and alignments would generally remain the same throughout the road widening. The realignment of both legs of South to Brooks would utilize mostly existing street rights-of-way, but is a key component to improving the traffic flow through the intersection. Minor right-of-way shifts may occur to avoid land uses, improve sight distances, and to avoid parks or historic properties. The speed limit is expected to be 40 to 56 kph (25 to 35 mph) on the 3 improved streets.

Right-of-way

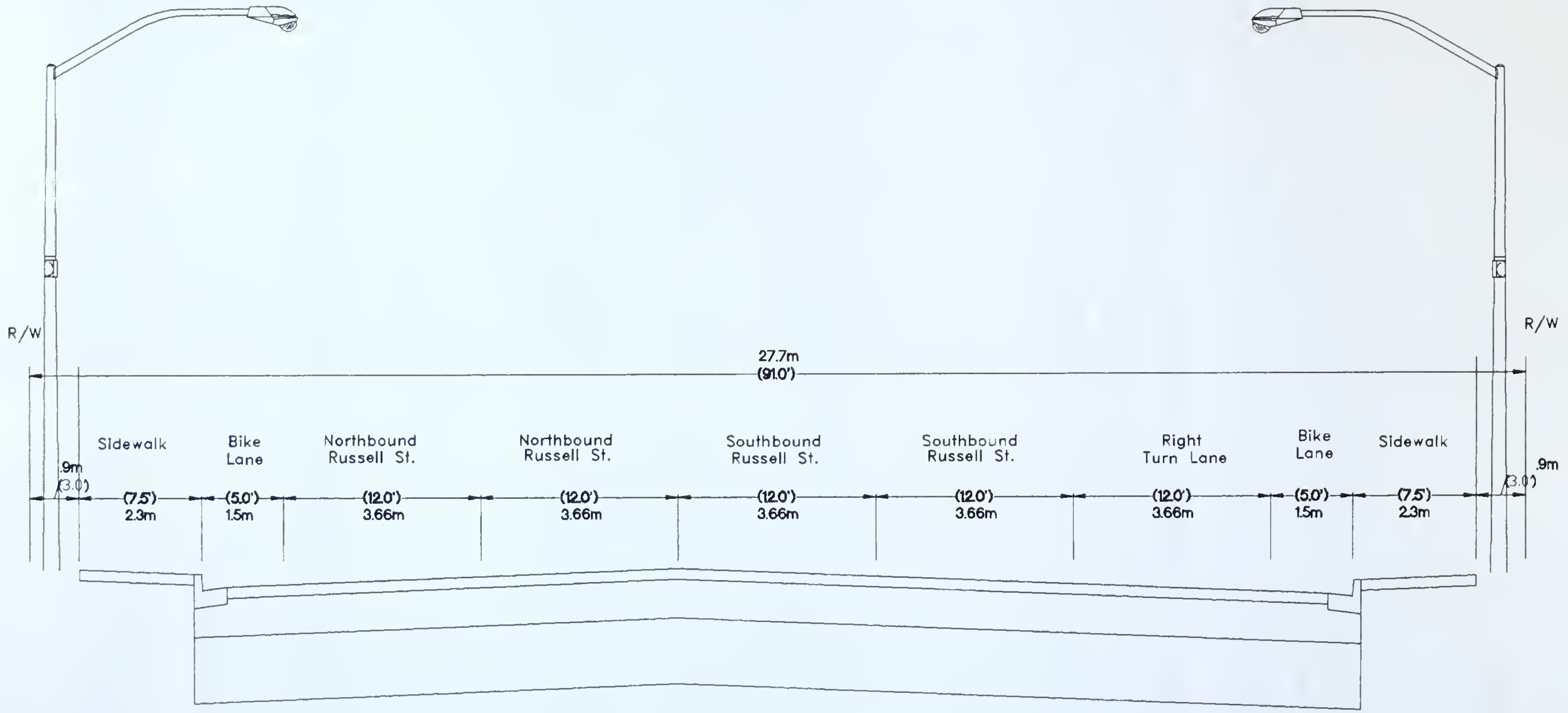
The proposed right-of-way for Russell St. is shown on Figures 1-3 and 1-4. A new right turn lane will be added on the north side of the Brooks/South/Russell intersection to accommodate southbound traffic turning onto South Ave.. The new roadway proposed between South Ave. and Brooks St. in both the northeast and southwest quadrant of the intersection would utilize existing right-of-way where feasible. Right-of-way would need to be acquired for the new South Ave. reroutes that would cross existing commercial properties. Figures 1-5 and 1-6 show proposed typical cross sections of South Ave. east and west of Brooks St., respectively. Figures 1-7 and 1-8 show the proposed right-of-way for improvements to Brooks St. between Fairview Ave. and the intersection and between the intersection north to the East Relocation of South Ave., respectively. Final designs will meet requirements of American Association for State Highway Transportation Officials (AASHTO) and the Manual on Uniform Traffic Control Devices (MUTCD) Design guidelines

Drainage

There would be no significant change in the drainage pattern as a result of the Project. Drainage would generally follow the existing pattern of gutters and storm drains.

Intersections and Traffic Signals

Northeast of the Brooks/South/Russell intersection, a new traffic signal may be installed at the intersection of Brooks St. with the proposed realignment of South to between Central and Sussex. Signals would be realigned and upgraded at Brooks and Russell, as well as Brooks and Fairview.

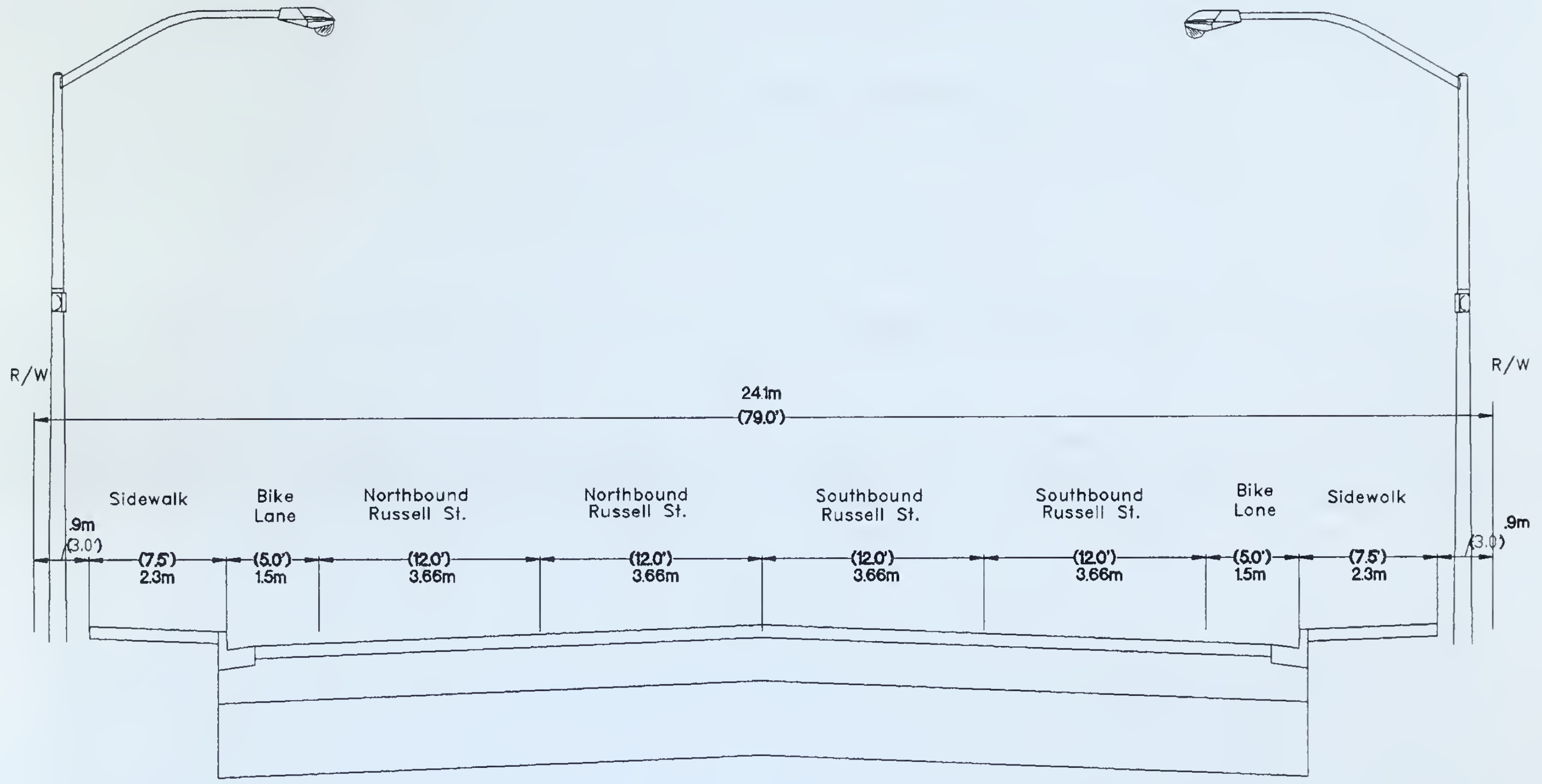


RUSSELL STREET

North of the Intersection

PROPOSED TYPICAL CROSS SECTION

Figure 1-3

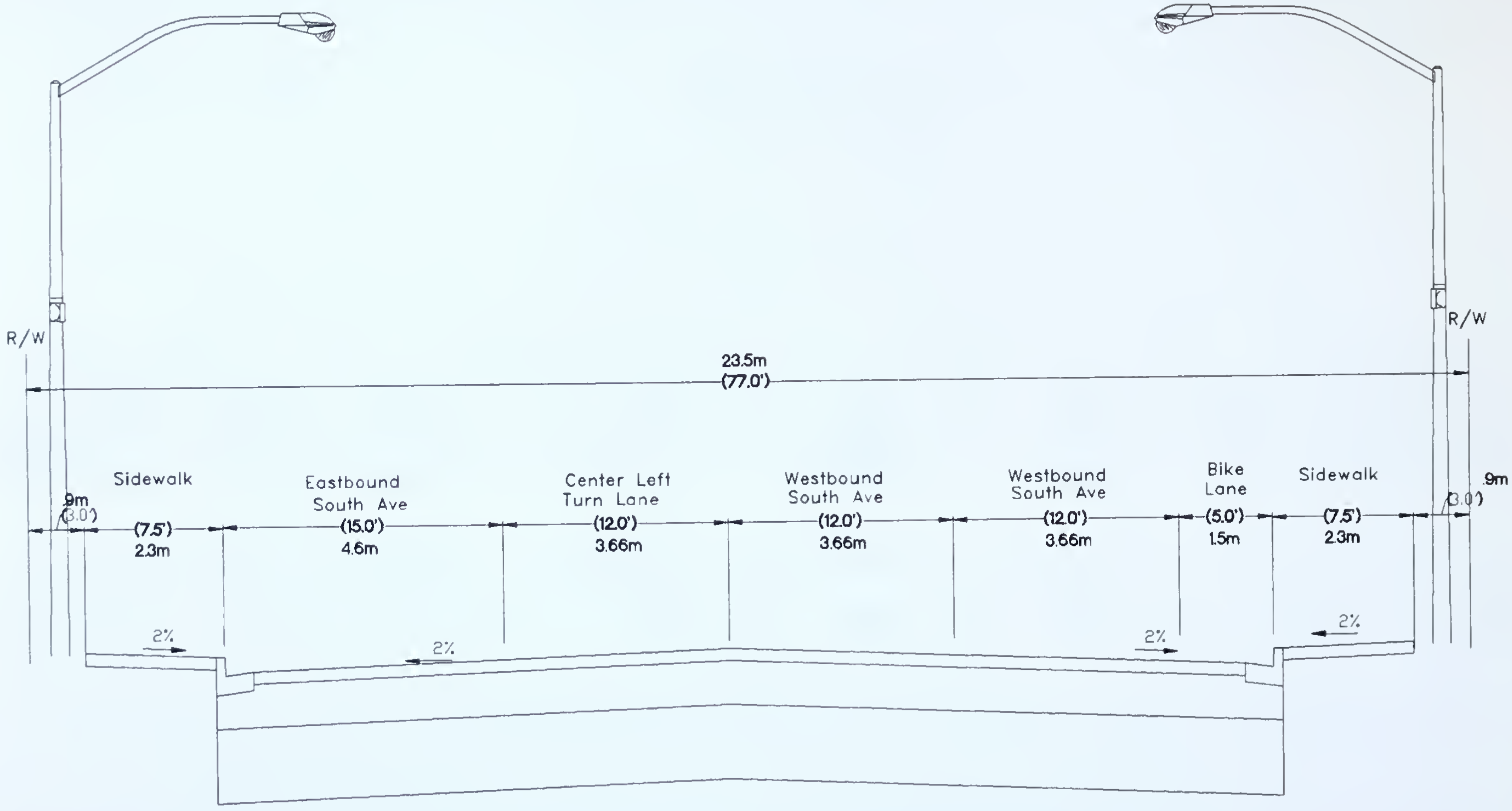


RUSSELL STREET

South of the Intersection

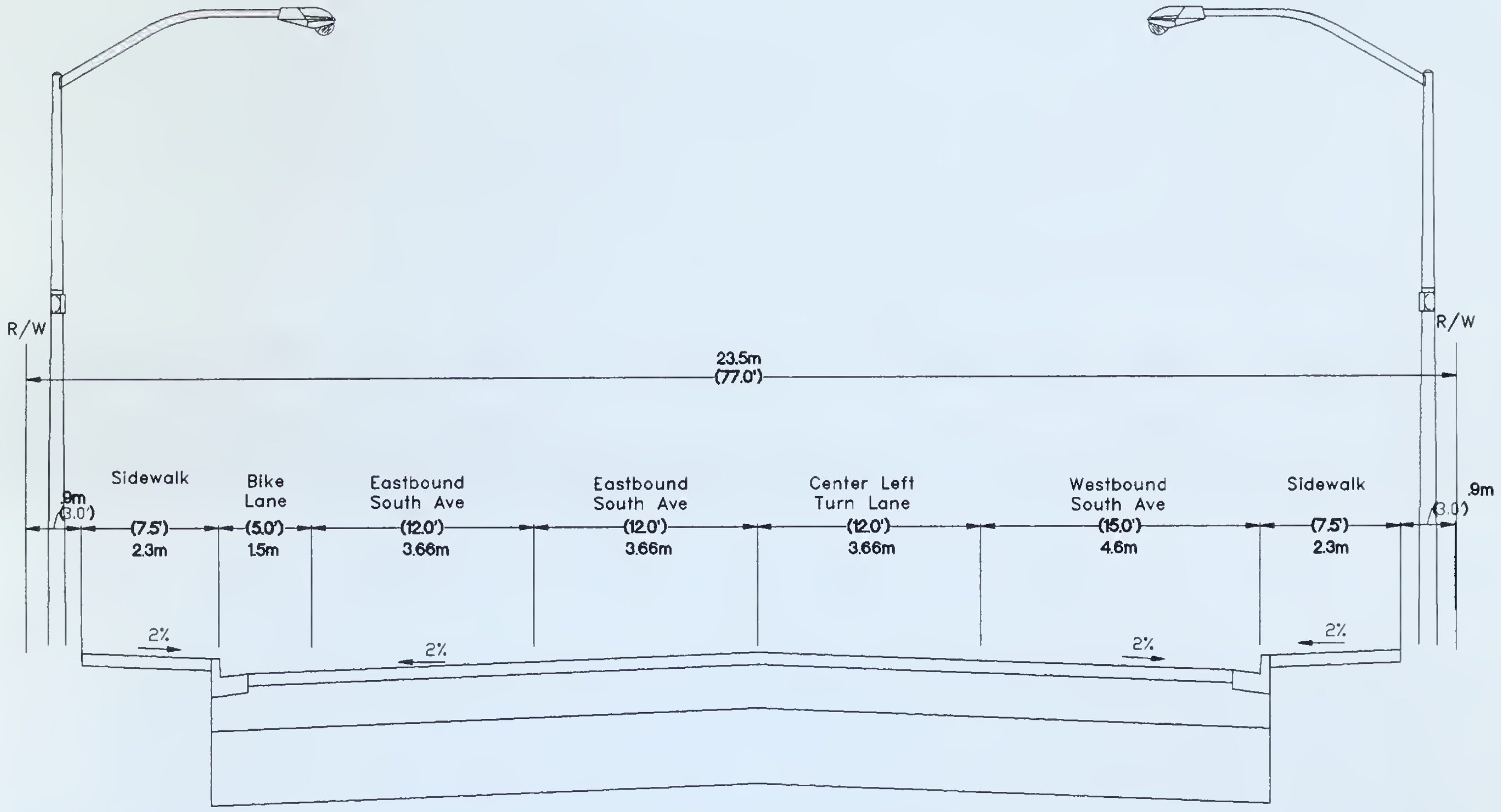
PROPOSED TYPICAL CROSS SECTION

Figure 1-4



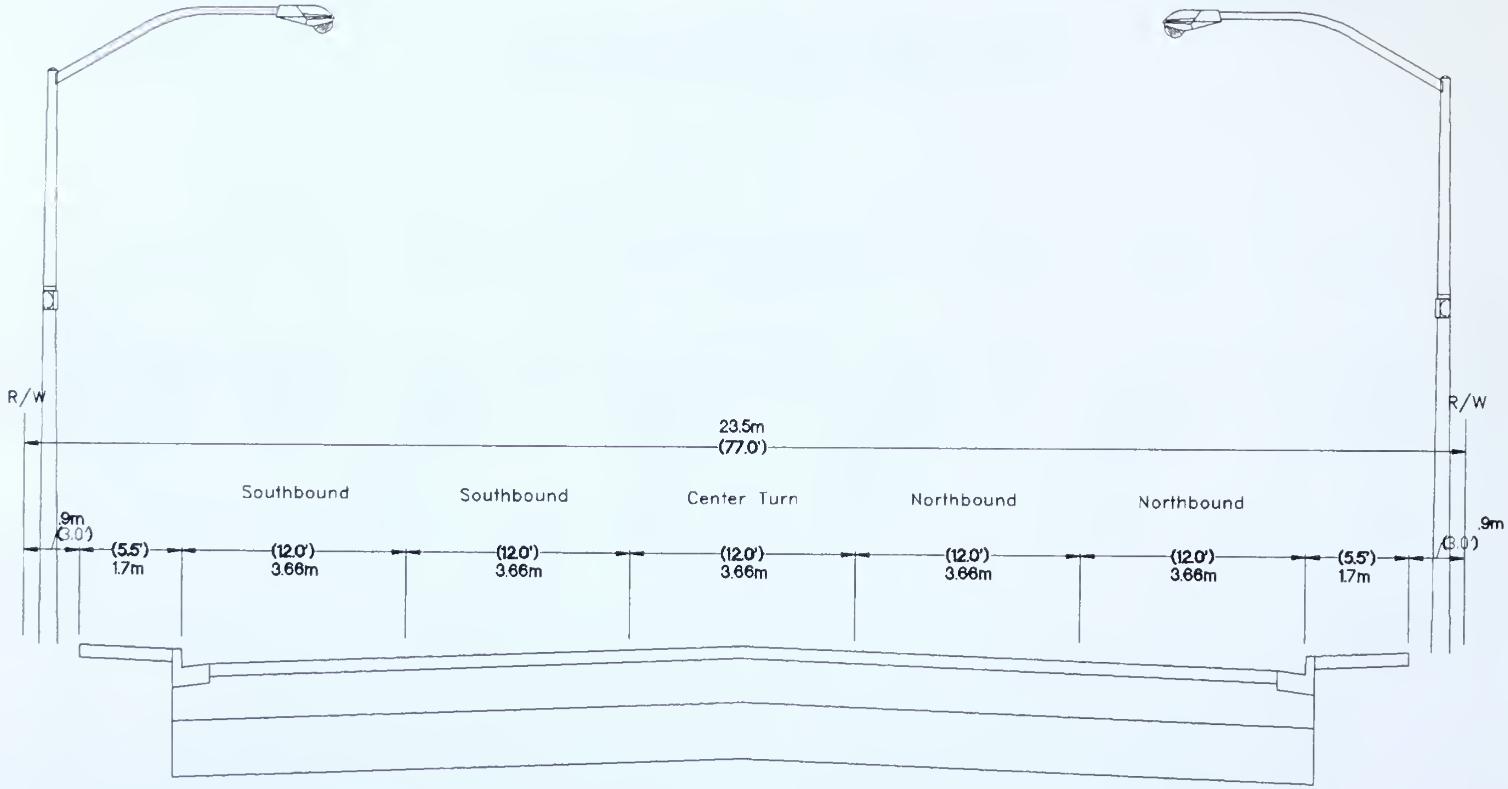
SOUTH AVENUE EAST REALIGNMENT

PROPOSED TYPICAL CROSS SECTION
Figure 1-5



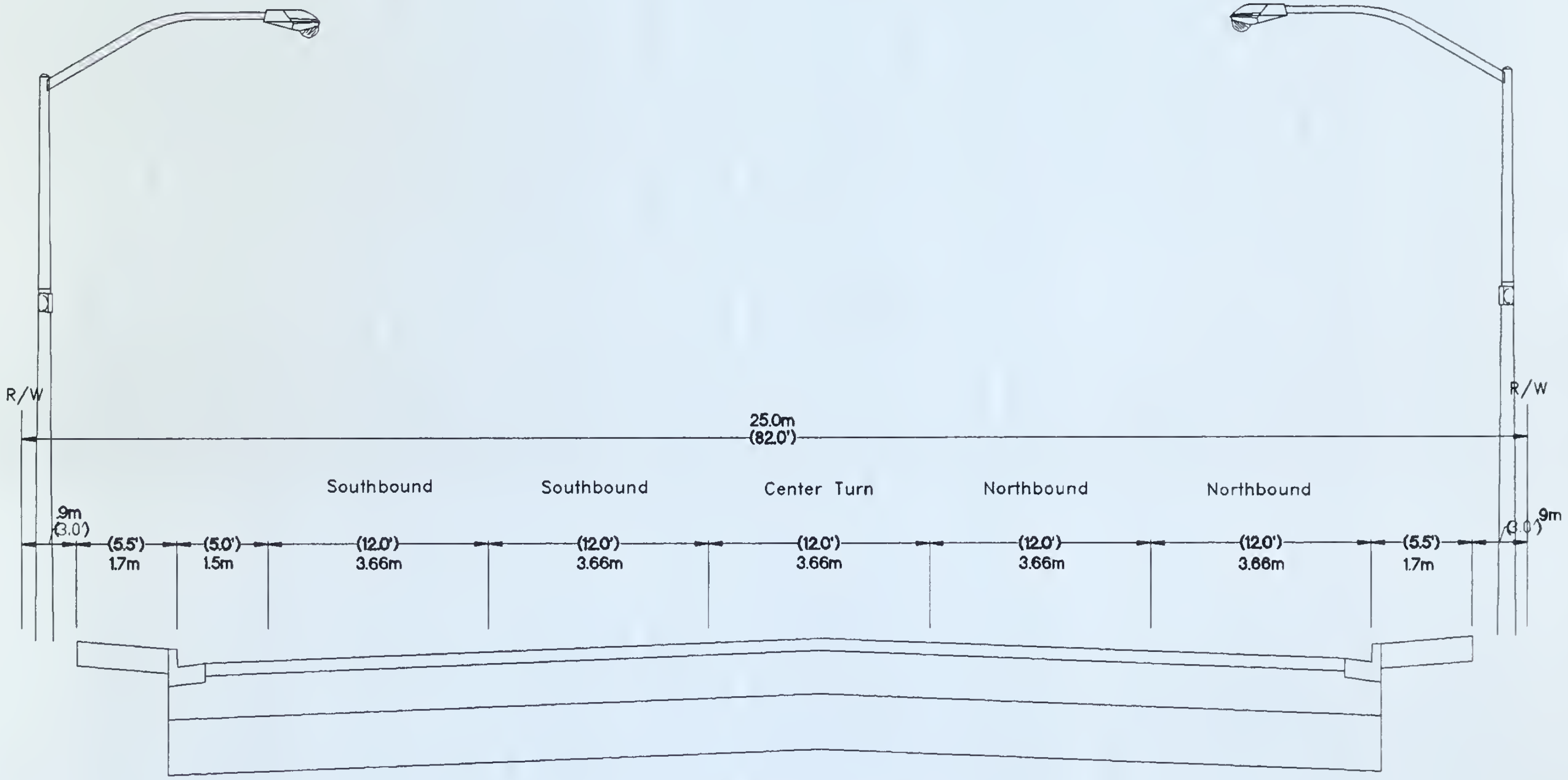
SOUTH AVENUE WEST REALIGNMENT

PROPOSED TYPICAL CROSS SECTION
Figure 1-6



BROOKS STREET
Fairview to Intersection

PROPOSED TYPICAL CROSS SECTION
Figure 1-7



BROOKS STREET

Intersection to East Relocation

PROPOSED TYPICAL CROSS SECTION

Figure 1-8

New intersections would be designed or improved in accordance with MDT standards. Traffic signals would be added or changed according to a determination of need and warrants to be conducted in consideration of the guidelines presented in the *Manual on Uniform Traffic Control Devices* (FHWA, 1988).

Project Schedule

Preliminary engineering evaluation of the Brooks/South/Russell Intersection began in September 1994. Many alternatives were considered and eliminated from further consideration since that time (also refer to Chapter 2). If approved, final design phase of the selected alternative would start in January 1998 and be completed in July 1998. Project construction could begin as early as late summer of 1999.

Project Costs and Funding

Project costs would include construction costs, right-of-way and engineering costs, mitigation costs, and the cost of consuming non-renewable resources. Non-renewable resources include the energy required to construct the project and the materials used that become unavailable for other needs.

Construction costs are discussed further for each alternative in Chapter 2 - Project Alternatives. The estimates include the costs associated with mobilization, excavation, aggregate base course, asphaltic concrete pavement, drainage structures, bridges, guard rails, traffic control, clearing, landscaping, sidewalks, striping and signing, dust palliative, and construction engineering. The total estimated cost for construction ($2.75 million), right-of-way ($1.22 million), and engineering ($0.69 million) for the preferred alternative is $4.66 million which represents a mid-range cost among the considered alternatives. Total cost for the West Approach is $1.90M, the East approach is $1.50M, and the improvements at Brooks/South/Russell is $1.2M. (See Chapter 2 for more detail).

If approved, federal funding under the Congestion, Mitigation, and Air Quality program (CMAQ); Section 109(f) of the Clean Air Act (1970) and amendments, 1990) would be used. CMAQ, a program under the Intermodal Surface Transportation Efficiency Act (ISTEA) passed by Congress in 1991, allows funds for roadways, rail and trail projects, and bicycle projects in metropolitan areas that help alleviate congestion and meet clean air objectives. The CMAQ program is administered by the MDT. The City of Missoula may receive further funding in the future depending upon conformity with the standards for carbon monoxide (CO) and particulate matter (PM_{10}).

PURPOSE AND NEED FOR THE PROJECT

The intersection of Brooks St., South Ave., and Russell St. has been a source of frustration for area commuters, pedestrians, and bicyclists for many years. Because it is a complex intersection, each phase of the signal cycle is lengthy. The amount of time it takes to drive, ride, or walk through the intersection creates congestion, delays, and bottlenecks, particularly during morning and evening commutes and other peak traffic periods. Vehicle emissions, produced from lengthy engine idling times at this intersection, have often in the past exceeded federal air quality standards for carbon monoxide (CO).

The purpose of the proposed project is to improve traffic, bicycle, and pedestrian flow through the intersection and to relieve congestion to an acceptable level of service. The proposed action would reduce idling time, minimize impacts to area businesses, and would further improve air quality at the intersection.

Air Quality

The congestion and lengthy vehicle idling times at the Brooks/South/Russell intersection has caused in the past localized vehicle emissions that have exceeded National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO). Between February 1987 and November 1991, Missoula had fourteen exceedances for CO at this intersection, nine of which resulted in a violation of the Federal Standard (Schmidt, 1994).

According to the U.S. Environmental Protection Agency (EPA) Aerometric Information Retrieval System (AIRS), the CO monitor at Brooks/South/Russell has not measured an exceedance of NAAQS for CO since 1991. The City of Missoula may reapply to the Environmental Protection Agency (EPA) for attainment after 8 quarters of attainment. The application takes approximately 3 to 4 years to process and the City must demonstrate that it can continue to meet federal air quality standards during a 10-year maintenance period. Given the expected increases in traffic volume through the intersection and the associated congestion-induced idling times, the City is unsure it will be able to meet continuous attainment during the maintenance period unless improvements are made to the intersection.

The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) set aside funds through the CMAQ Program to fund eligible transportation projects or programs which are likely to contribute to the attainment of a national ambient air quality standards. Brooks/South/Russell is the only location in Montana that has not consistently met air quality standards for CO and is proposed through a decision on this document to receive CMAQ funding[1].

Condition of the Existing Roadways and Turning Movements

Missoula's existing street system consists of principal and minor arterials, as well as collector and local streets. Brooks and Russell St. are principal arterials that have a primary function of carrying traffic to and from major traffic generators in the community. South Ave. is a minor arterial that provides through trips and local neighborhood access, and connects neighborhoods.

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[1] The cities of Billings and Great Falls, Montana have CO nonattainment areas; however, those locations did not reach secondary designation as specified in the CMAQ program and thus are not eligible for funds.

Brooks St. is approximately a 18.3 meter (60 feet) wide right-of-way (ROW). The travel way is a four-lane, divided highway. Russell St. is a two lane, 24.4 meter (80 feet) wide ROW. South Ave. is a two lane, 21.3 meter (70 feet) wide ROW. All three roadways are surfaced with asphaltic concrete pavement. Russell and South conform to conventional traffic engineering standards of four approach street segments crossing at or near 90 degree angles. However, Brooks St. bisects the intersection of Russell and South from the southwest to the northeast, creating a six-way approach configuration with restricted turning movements. The existing intersection does not have developed curbs, gutters and sidewalks.

Current signalization allows all turning movements except:

- no left turns from Brooks St.
- no left turns from Russell St.
- no right turns from Brooks St. to Russell St.
- no right turns from South Ave. to northbound Brooks St.

Recent system improvements in the City of Missoula include the completion of the road widening project on Reserve St. from South 3rd St. to Brooks. This project, completed in 1993, expanded Reserve St. to four lanes and added or upgraded signals at South 3rd St., South Ave., Mount Ave., and Brooks St.

Current and Projected Traffic Volumes

The vehicle capacity problems at the existing Brooks/South/Russell intersection were evaluated using standard traffic engineering criteria:

- approach volume-capacity (v/c) ratio
- critical v/c ratio
- approach stopped delay
- intersection stopped delay
- approach level of service
- intersection level of service

Stopped delay is related to the vehicle idling hours. Congestion for this intersection was determined based on the level of effectiveness of the proposed action and alternatives to reducing stopped delay (i.e., level of service and intersection v/c ratio).

To supplement the 1992 AADT traffic volumes counted by the city of Missoula, traffic volumes entering the intersection were counted during the a.m. and p.m. peak hours on November 5, 1993. Traffic volumes at the same location were also obtained for the No Action alternative from the QRS-II traffic model used for the *Missoula Transportation Plan* (Table 1-1).

Table 1-1 shows that southbound Brooks St. has the heaviest traffic volume and is the worst leg in all the three scenarios. Eastbound South Ave. is the best in the current and all of the alternative scenarios. However, the traffic on South Ave. would not enter directly into the intersection in any of the alternative scenarios.

TABLE 1-1
Current and Projected Traffic Volumes at Brooks/South/Russell Intersection

PM Peak Traffic	Existing Traffic 1993	Projected Traffic Volumes (for build year estimated 2015)	
		No Action	South Ave Realign
Northbound Russell	599	727	893
Southbound Russell	754	903	903
Northbound Brooks	755	1016	1445
Southbound Brooks	1562	1635	2557
Eastbound South	657	607	n/a
Westbound South	718	1037	n/a

Source: Bell-Walker

The intersections of Brooks at Southgate Mall, Brooks and Fairview, and Brooks and Stephens were also analyzed for any possible impacts that would result from realigning South Ave.. The results of the capacity analysis at these intersections with and without the South Ave. realignment are compared in Table 1-2.

TABLE 1-2
Comparison of Intersection Capacity at Outlying Intersections

Intersection	Intersection Capacity	
	No Action	South Ave Realign
Brooks/Southgate Mall	under capacity	under capacity
Brooks/Fairview	under capacity	under capacity
Brooks/Stephens	under capacity	under capacity

A summary of Missoula's arterial roadway system by functional classifications (principal arterials, minor arterials, and collector streets) and 1992 annual average daily traffic (AADT) is presented in Table 1-3 (City of Missoula). The street with the highest AADT in 1992 were Brooks, Broadway, and Russell St. Not surprising, Brooks St. had the highest AADT in the City, occurring at the intersection of Brooks, South, and Russell.

TABLE 1-3
Existing Street System and Traffic Volumes

Functional Classification/ Street Name	Location	1992 AADT
PRINCIPAL ARTERIALS		
Reserve St.	South of Brooks St.	16,750
	Between South Ave. and Central Ave.	17,850
	South of South 3rd St. West	17,740
Broadway St.	East of Reserve St.	10,690
	South of Mullan Rd.	21,760
	West of Orange St.	12,360
Brooks St.	*Northeast of Reserve St.*	17,530
	Southwest of Russell St.	22,660
	Northeast of South Ave.	23,630
	Southwest of Higgins Ave.	13,220
Russell St.	*South of Broadway*	21,530
	North of South 3rd St.	20,300
	North of Brooks St.	13,150
Orange St.	Bridge	19,300
	South of 3rd St.	16,800
	North of Broadway	14,250
Stephens Ave.	South of 6th St.	17,740
	North of Brooks St.	14,980
Madison Ave.	At Fork River Bridge	17,200
MINOR ARTERIALS		
South Ave.	*West of Reserve St.*	11,610
	East of Reserve St.	12,000
	West of Brooks St.	12,990
	East of Brooks St.	10,270
Russell St.	South of Brooks St.	12,830
	North of Higgins Ave.	9,580
Higgins Ave.	West of Russell St.	13,950
	South of South Ave.	12,370
	North of South Ave.	10,420
	South of Brooks St.	12,390
	South of South 3rd	17,850
	North of Front St.	13,690
Front St.	West of Higgins Ave.	6,020
	West of Madison Ave.	1,880
Arthur Ave.	North of South Ave.	8,470
	South of South 6th St.	9,820
South 5th St.	West of Russell St.	1,090
	East of Russell St.	3,690
	West of Higgins Ave.	3,090

TABLE 1-3
Existing Street System and Traffic Volumes

Functional Classification/ Street Name	Location	1992 AADT
South 6th St.	West of Russell St.	180
	East of Russell St.	1,760
	West of Higgins Ave.	2,460
Mount Ave.	West of Stephens Ave.	9,660
	West of Brooks St.	6,780
	East of Brooks St.	5,290
South 3rd St.	West of Reserve St.	5,700
	East of Reserve St.	12,270
	West of Russell St.	15,680
	East of Russell St.	6,830
	West of Orange St.	8,030
	East of Orange St.	2,110

Source: City of Missoula, 1992

The intersection of Brooks St., Russell St., and South Ave. has become increasingly congested over the past decade. Missoula's 4% population growth rate has also contributed to the chronic traffic problems at this intersection. The intersection currently handles over 48,000 vehicle trips per day and delays at the intersection can be as long as six minutes if it takes more than one cycle of the lights to get through the intersection. Traffic volumes for the estimated build year, 2015, are projected to increase to over 63,000 vehicles per day in the 20-year planning period (BWE, 1994).

Level of Service (LOS) describes the quality of traffic flow at an intersection or on a roadway. The *Highway Capacity Manual (HCM)* denotes six LOS definitions:

Level of Service A: Light traffic on approach; short, stable queues existing during red signal phase; little or no delay at unsignalized intersections.
Level of Service B: Moderate traffic approach; stable queues; little additional delay for signalized intersections; short delay at unsignalized intersections.
Level of Service C: Moderately heavy traffic approach; moderately long but stable queues; moderately but acceptable delay at signalized intersections; average 10 to 20 seconds delay at unsignalized intersections.
Level of Service D: Heavy traffic on approach; long, unstable queues; delays sometimes become excessive at signal; long delay to minor street traffic at unsignalized intersections.
Level of Service E: Heavy flow (capacity) on approach; long queues at signal suffering long delays; very long traffic delay at unsignalized intersections.
Level of Service F: Heavy, congested traffic conditions; more traffic demand than capacity; queues may cause congestion that affects other traffic movements at unsignalized intersections.

In urban settings, LOS-C is a desirable design objective.

The p.m. peak hour LOS determined for each of the major intersections in the study area is summarized in Table 1-4. Analysis procedures were based on the 1985 *Highway Capacity Manual*, existing traffic counts, and existing lane configurations (Transportation Research Board, 1985). Since these calculations were made, new procedures were developed and published in the October, 1994 Highway Capacity Manual. Spot checks of intersections utilizing updated methodology didn't change conclusions.

TABLE 1-4
1993 P.M. Peak Hour Level of Service

Intersection	Delay (seconds/vehicle)	PM Peak Hour LOS
Brooks/Fairview	14.6	B
Brooks/Mount	18.6	C
Brooks/South/Russell	>100	F
Brooks/Reserve	35.7	D
Mount/Stephens	17.9	C
Paxson/Brooks	20.8	C
Reserve/Mount	6.9	B
Reserve/South 3rd St.	21.5	C
Russell/Mount	23.4	C
Russell/South 3rd St.	34.7	D
Russell/South 5th St.	7.1	B
Russell/39th St.	22.6	C
Stephens/Brooks	21.8	C
South/Grant	21.5	C
39th St./Dore Lane	7.2	B

Source: BWE, 1994

Accident Rates

During the 6-year period from 1988 to 1993, the accident rate ranged from 1.0 to 4.8 per million vehicle kilometers (1.72 to 7.75 per million vehicle miles) traveled at specific sections of Brooks/South/Russell (City of Missoula, 1994). This accident range is comparable to the statewide average for urban intersections from the State of Idaho (i.e., 0.45 - 3.17 per million vehicle kilometers or 0.73 - 5.1 per million vehicle miles).[2] With the exception of the intersection of Brooks and Stephens, twice as many accidents occurred at the Brooks/South/Russell intersection than at any other intersection along Brooks St., South Ave. or Russell St. The proposed project would help reduce accidents by removing the through traffic on South Ave., and providing protected left turn lanes, additional traffic lanes, striping, and upgraded signals. If the proposed action is approved, the fewer cars routed directly through the intersection would improve the high traffic flow and reduce the congestion that can lead to traffic accidents.

Transportation Plan

There is no known relationship between the statewide or any adopted urban transportation plans and the proposed project. The *Draft 1985 Missoula Transportation Plan* (MTP) discussed the traffic congestion problems at the Brooks/South/Russell intersection and included it in the long term planning as the number 1 recommended improvement. At that time the proposal was to construct an "overpass to allow Brooks St. traffic to travel over the remaining at-grade intersection of South and Russell". The MTP discussed the recommended overpass structure dimensions, capacity, and cost and potential funding sources.

Local Planned Developments

The study area is heavily developed with commercial, office, and some residential property. Brooks St. is predominantly commercial from Reserve St. to Mount Ave. and residential from Mount Ave. to Higgins Ave.. South Ave. and Russell St. are mixed commercial and residential. Commercial development that could impact traffic at Brooks/South/Russell includes Walmart on south U.S. Highway 93 just south of Reserve St. New residential developments in the Fort Missoula area, along Upper Miller Creek Rd., in the South Hills area and in the nearby City of Lolo (south of Missoula along U.S. Highway 93) could also increase traffic volumes along Brooks St., South Ave. and Russell St.

PROJECT BACKGROUND

The need for the project was first formally identified through the City of Missoula's transportation planning efforts, as documented in the *Draft Missoula Urban Transportation Plan* 1985. In early 1993, the City requested proposals from engineering consulting firms to conduct surveys, preliminary engineering, traffic modeling, environmental assessment, and related services for the Brooks/South/Russell Intersection Traffic Improvement Project.

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[2] The State of Idaho average was used for comparison since a statewide average for Montana at urban intersections was not available during the traffic studies 1993.

An engineering team led by Bell-Walker Engineers was selected to conduct the work. During the preliminary alternatives development and traffic modeling, several grade separation and at-grade alternatives were evaluated and dismissed either because they did not meet the project purpose and need or they were technically undesirable and infeasible.

The team began the current and ongoing public involvement process. A public scoping meeting was held in Missoula in November 1993. During the engineering analysis of alternatives, the public involvement process included regular meetings with two advisory committees, one comprised of members of the public, known as the Citizen Action Committee (CAC), and the Technical Advisory Committee (TAC), comprised of technical experts. The meetings were held in Missoula to encourage public interest, foster new ideas, and identify issues and concerns with the project alternatives. Each of the feasible alternatives was evaluated by the engineers and environmental team, and the results were presented to both the public CAC and TAC meetings.

In mid-1994, a neighborhood meeting was held where the public was invited to provide their input for the issues to be evaluated and considered in the development of alternatives and the preparation of the EA.

A public workshop was held in December 1994 to discuss the various alternatives with interested members of the community. Many members of the public were not in favor of the grade separation alternatives (i.e., overpass or underpass), and subsequently additional at-grade alternatives were explored. The engineering team identified and evaluated these new alternatives during 1995. A series of at-grade alternatives were individually evaluated and traffic modeling was conducted for each. Each was also screened using environmental criteria. Please refer to the Alternatives Development and Screening Process in Appendix A for more detail.

In February 1996, the South Ave. Realignment was identified by the members of the Technical Advisory Committee and the City of Missoula (see Chapter 4 for descriptions of TAC) as the proposed action to reduce congestion and traffic delays, and to continue to improve air quality at the intersection. This alternative has the added benefit of not substantially changing the urban character near the intersection.

Additional meetings were held with business owners between February 1995 and April 1996 to discuss the potential impacts to local businesses and residents. Input received in meetings with the City Council, the CAC, and TAC was used to arrive at the preferred alternative. In May 1997, the City of Missoula selected a preferred alternative that is further evaluated within this document.

CHAPTER 2 - PROJECT ALTERNATIVES

CHAPTER 2 - PROJECT ALTERNATIVES

PREFERRED ALTERNATIVE

The alternative selected as the preferred by the City of Missoula was announced in late May 1997. The preferred alternative, illustrated on Figure 2-1 is the South Ave. Realignment including Alternate E5, improvements to the Brooks/South/Russell intersection, minimization of Right-of-Way impacts, Alternate W7 and Traffic Demand Management (TDM).

Alternate E5

Alternate E5 (Figure 2-2) is a new route that allows traffic westbound on South Ave. to access Brooks St. northbound via new right-of-way and Sussex Ave. The new route would traverse the open field on new Right-of Way (ROW) behind the School District building and feed into Sussex Ave. at Stephens Ave. The new route would continue west on Sussex Ave. to its intersection with Brooks St. using the existing ROW alignment of Sussex Avenue. Provision for a free right turn onto Brooks St. would be incorporated into the modified intersection. Stephens Ave. traffic would remain as the existing, except that the new route would allow a left turning lane and a free right turn northbound to Stephens. The cost for construction ($1.1M), right-of-way ($0.12M), and engineering ($0.28M) for this alternate is estimated at $1.5M.

Alternate W7

Alternate W7 (Figure 2-3) takes eastbound traffic on South Ave. along a new route that uses Garfield St. south and then accesses Brooks St. southbound. The new route would require relocation of two commercial properties to create a free right turn onto Garfield St. It would continue south on Garfield using the existing right-of-way to approximately Fairview Ave. Additional right-of-way from one commercial property is required to make the engineered turn from Garfield onto Fairview Ave. The route would access Brooks St. at Fairview Ave. and Catlin St. Landscaping and sidewalks would be constructed along the entire new route. Traffic moving south along Garfield from South Ave. could access Brooks St. or Catlin St. or continue on through to Russell St. The cost for construction ($0.9M), right-of-way ($0.8M), and engineering ($0.2M) for this alternate is estimated at $1.9M.

Some of the additional project components for the preferred alternative include improvements at the intersection of Brooks/South/Russell. The components as described in Chapter 1, Project Description, would require $0.7M for construction, $0.3M for right-of-way and $0.2M for engineering, for a total estimated cost at $1.2M.

The project components to minimize right-of-way impacts is a stage of construction of the preferred alternative. This improvement would remove all left turns from the intersection of Brooks/South/Russell. No additional right-of-way would be required. The improvements would begin the process of acquainting the people with the new anticipated traffic pattern before the construction and associated disruptions begin. Improvements would require approximately $0.05M for construction and $0.01M for engineering, for a total estimated cost at $0.06M.

Since TDM has been identified as a desirable strategy within the City of Missoula's Transportation Plan Update, a TDM strategy with a 5% modal split is also part of the preferred alternative. Please refer to the "Alternatives Considered but Rejected" for a complete description of the TDM program.

ALTERNATIVES CONSIDERED

Several of the South Ave. Realignment alternatives were retained for further analysis and discussion among the TAC, CAC, business owners, and the City Council.

The final alternatives were evaluated and compared using engineering, traffic, public input, transportation planning, costs, and general environmental considerations. Appendix A discusses in more detail the alternatives development and screening process. Since TDM will likely be identified in the ongoing Transportation Plan Update as a desirable objective for Missoula, it is assumed to be a part of the alternatives described below.

No Action

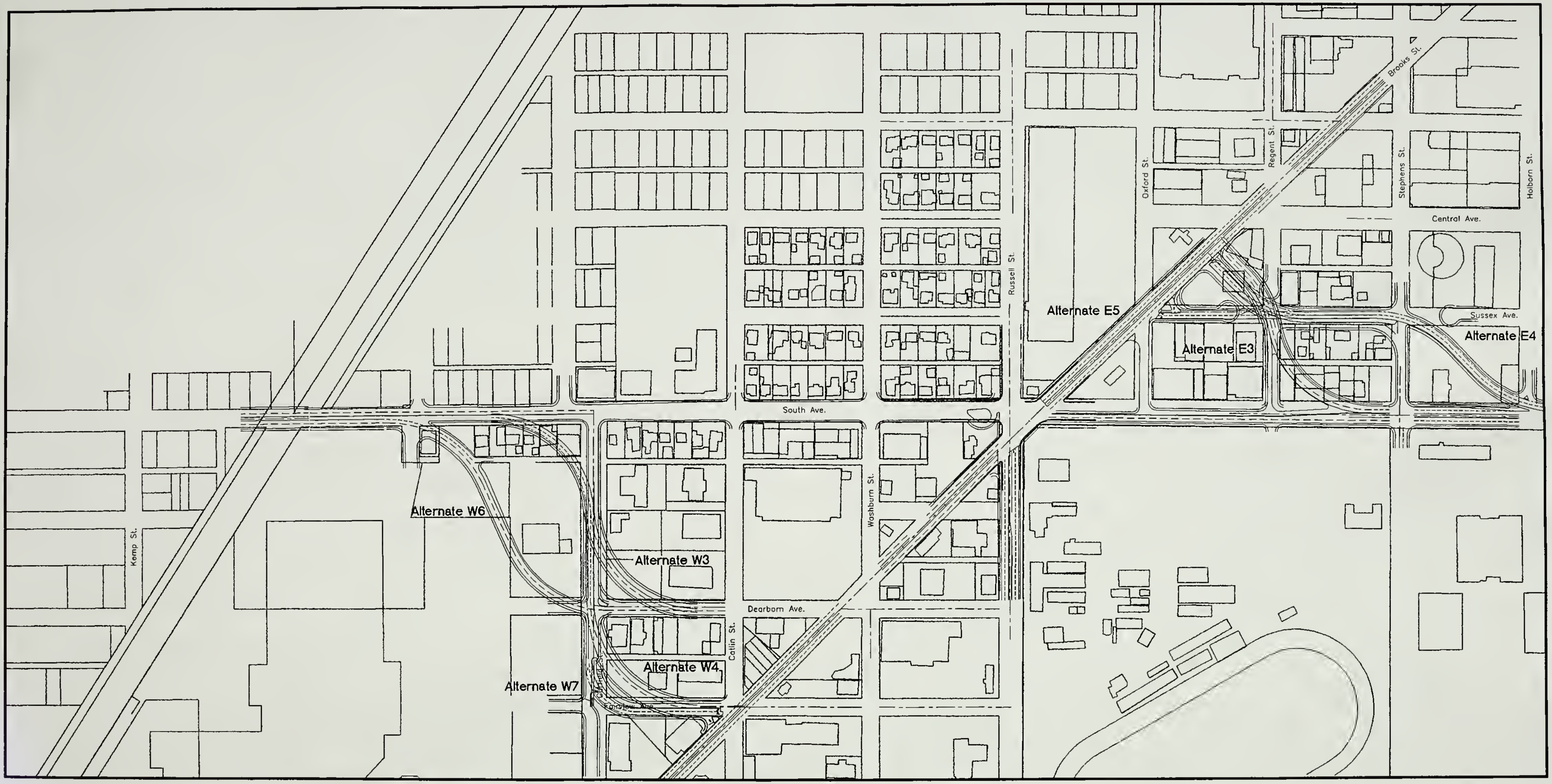
The No Action Alternative would result in no improvements at the intersection or other key streets and intersections and is not considered viable in helping to meet air quality standards, improve safety, increase traffic flow, and encourage local participation in TDM. TDM and a continually upgraded vehicle fleet (e.g., cleaner-burning cars) offer some promise in improving the air quality. However, with no physical improvement to Brooks/South/Russell, traffic volumes would continue to increase thus making major delays at the intersection inevitable. Carbon monoxide (CO) levels would increase in proportion to the number of vehicles and the length of the delays at the intersection. Thus, air quality problems (excessive CO concentrations) would be expected to persist. No provisions for bicyclists or pedestrians would be made.

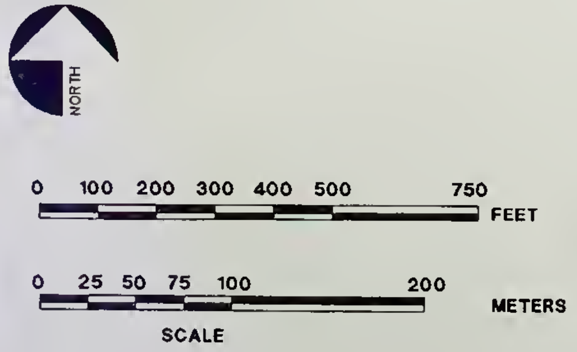
South Avenue Realignment

Each of these at grade alternatives involves a common action of improving the Brooks/South/Russell intersection as shown on Figure 2-1. Sidewalks and bikeways will be added on each leg of the intersection, properties affected by the new right-of-way will be rehabilitated and landscaped.

Minimizing Right-of-Way Impacts

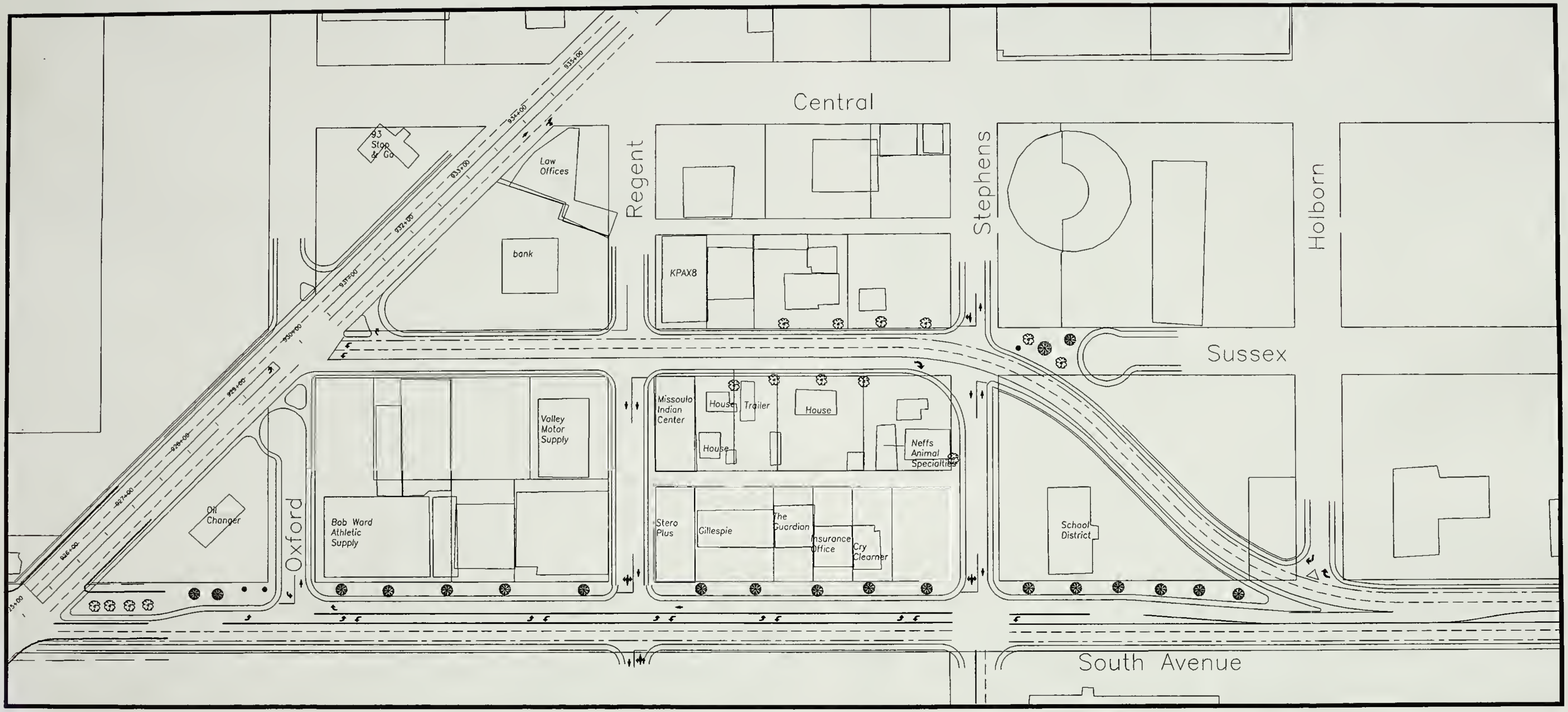
Currently at the intersection of Brooks/South/Russell left turns are only allowed on east- and westbound South Avenue to Brooks and to Russell Avenue. This minimizing ROW impacts action, described in Figure 2-4, would establish the approximate traffic pattern in the other Alternates by removing all left turns from the intersection of Brooks/South/Russell. The left





OVERVIEW OF SOUTH AVENUE REALIGNMENT

Figure 2-1



SOUTH AVENUE EAST REALIGNMENT (E5)
PREFERRED ALTERNATIVE

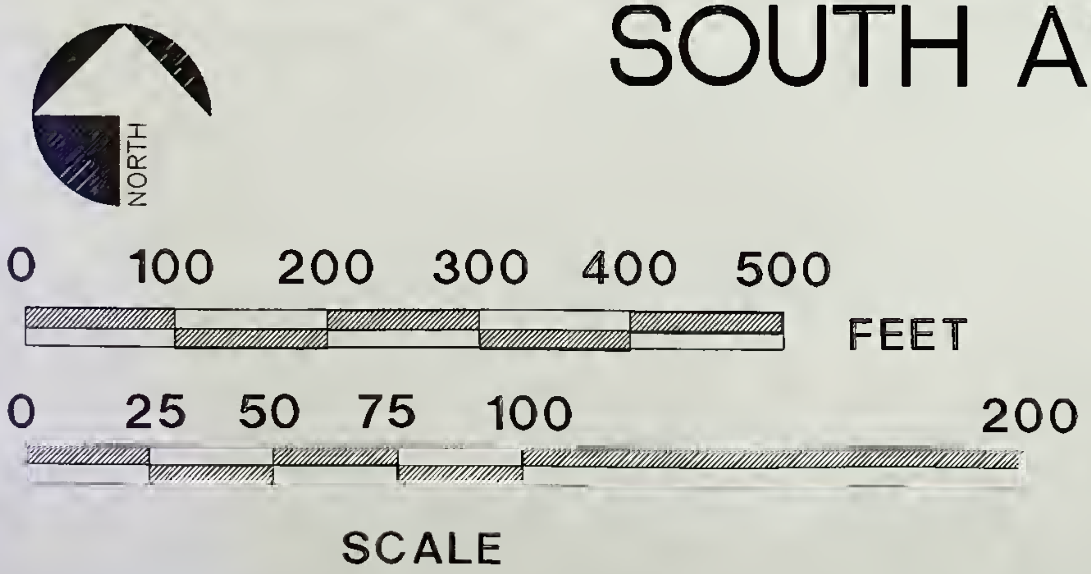
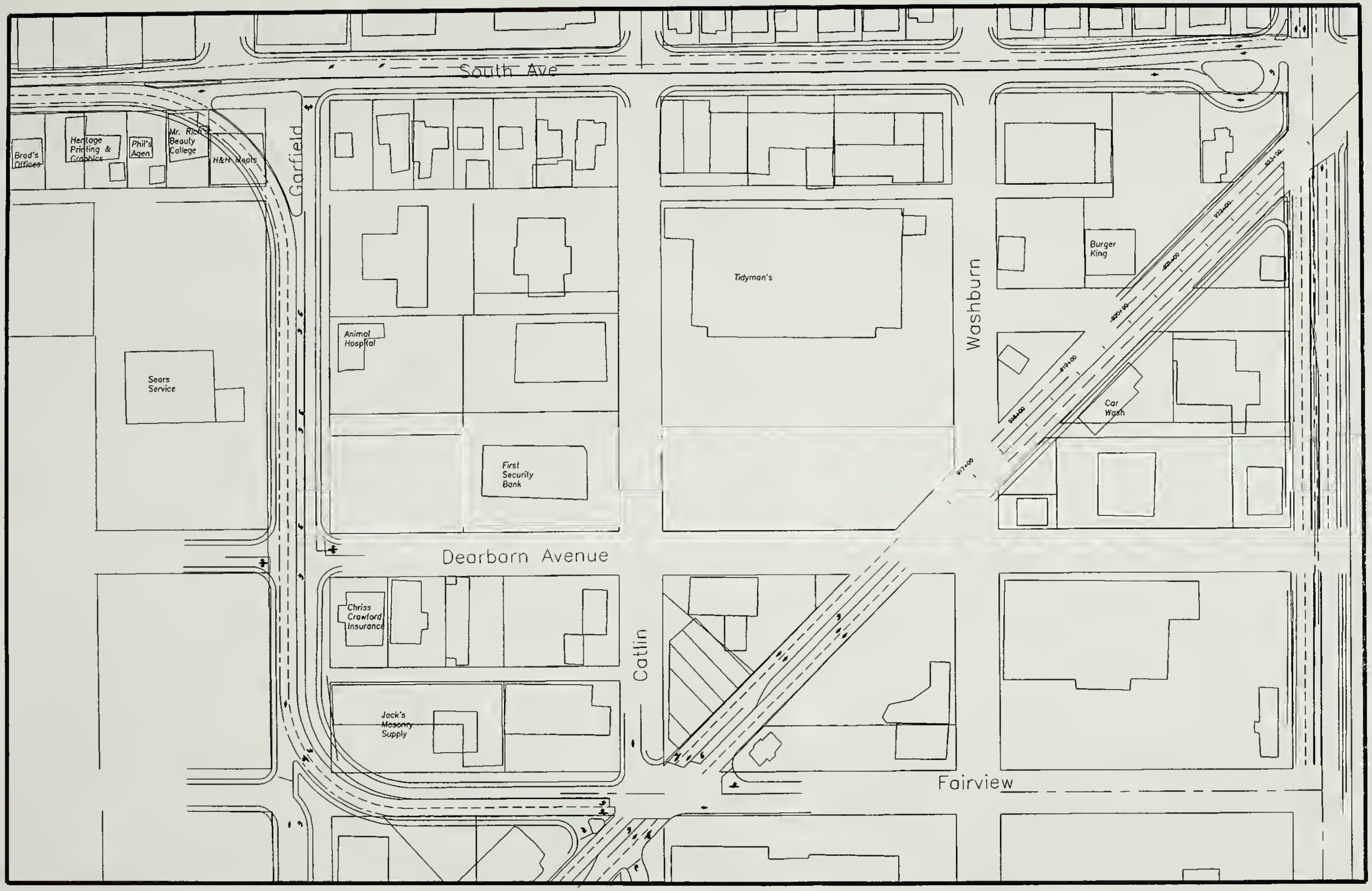


Figure 2-2



SOUTH AVENUE WEST REALIGNMENT (W7)
PREFERRED ALTERNATIVE

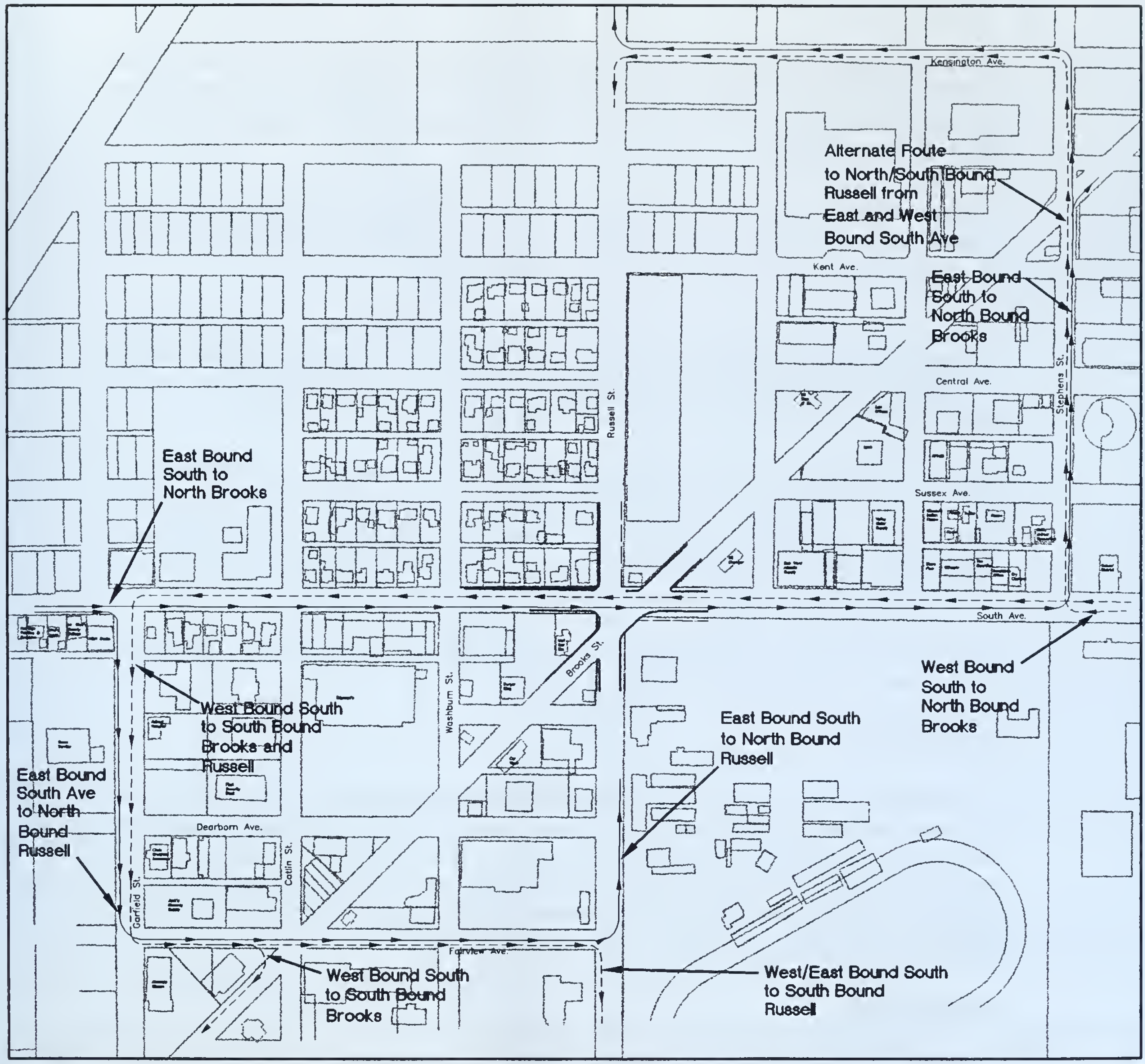
NORTH

0 100 200 300 400 500 FEET

0 25 50 75 100 200 METERS

SCALE

Figure 2-3


Kensington Ave.
Alternate Route to North/South Bound Russell from East and West Bound South Ave
Kent Ave.
East Bound South to North Bound Brooks
Central Ave.
Stephens St.
Sussex Ave.
Russell St.
East Bound South to North Brooks
South Ave.
West Bound South to North Bound Brooks
Brooks St.
Washburn St.
West Bound South to South Bound Brooks and Russell
East Bound South to North Bound Russell
East Bound South Ave to North Bound Russell
Dearborn Ave.
Catlin St.
Garfield St.
Fairview Ave.
West Bound South to South Bound Brooks
West/East Bound South to South Bound Russell
NORTH
0 100 200 300 400 500 FEET
0 25 50 75 100 200 METERS
SCALE
West Bound Traffic
East Bound Traffic

SOUTH AVENUE REALIGNMENT
MINIMIZE RIGHT-OF-WAY IMPACTS

Figure 2-4

turning vehicles from South Avenue for northbound Brooks Street would now utilize the existing street systems as described in the following paragraphs.

Eastbound South Avenue, left turning traffic for northbound Brooks will continue East through the intersection of Brooks/South/Russell and make a left turn at Stephens Street. They will then proceed northbound on Stephens to Brooks and make a right turn to proceed North on Brooks Street.

Eastbound South Avenue, left turning vehicles for northbound Russell will turn right at Garfield Street, go southbound to Fairview Avenue, go eastbound on Fairview to Russell and then make a left turn to proceed northbound on Russell.

Left turning vehicles from westbound South Avenue to southbound Brooks will proceed westbound through the intersection of Brooks/South/Russell to Garfield, turn left at Garfield and South Avenue, proceed South on Garfield to Fairview, turn left on Fairview and turn right at the Fairview and Brooks intersection and proceed South on Brooks.

The left turning traffic from westbound South Avenue that wants to go South on Russell would take the same route as mentioned previously for southbound Brooks, but instead of turning South on Brooks at the Fairview/Brooks Street intersection they would proceed eastbound on Fairview through the intersection of Fairview and Brooks to Russell Street then turn right at Fairview and Russell Street for southbound Russell.

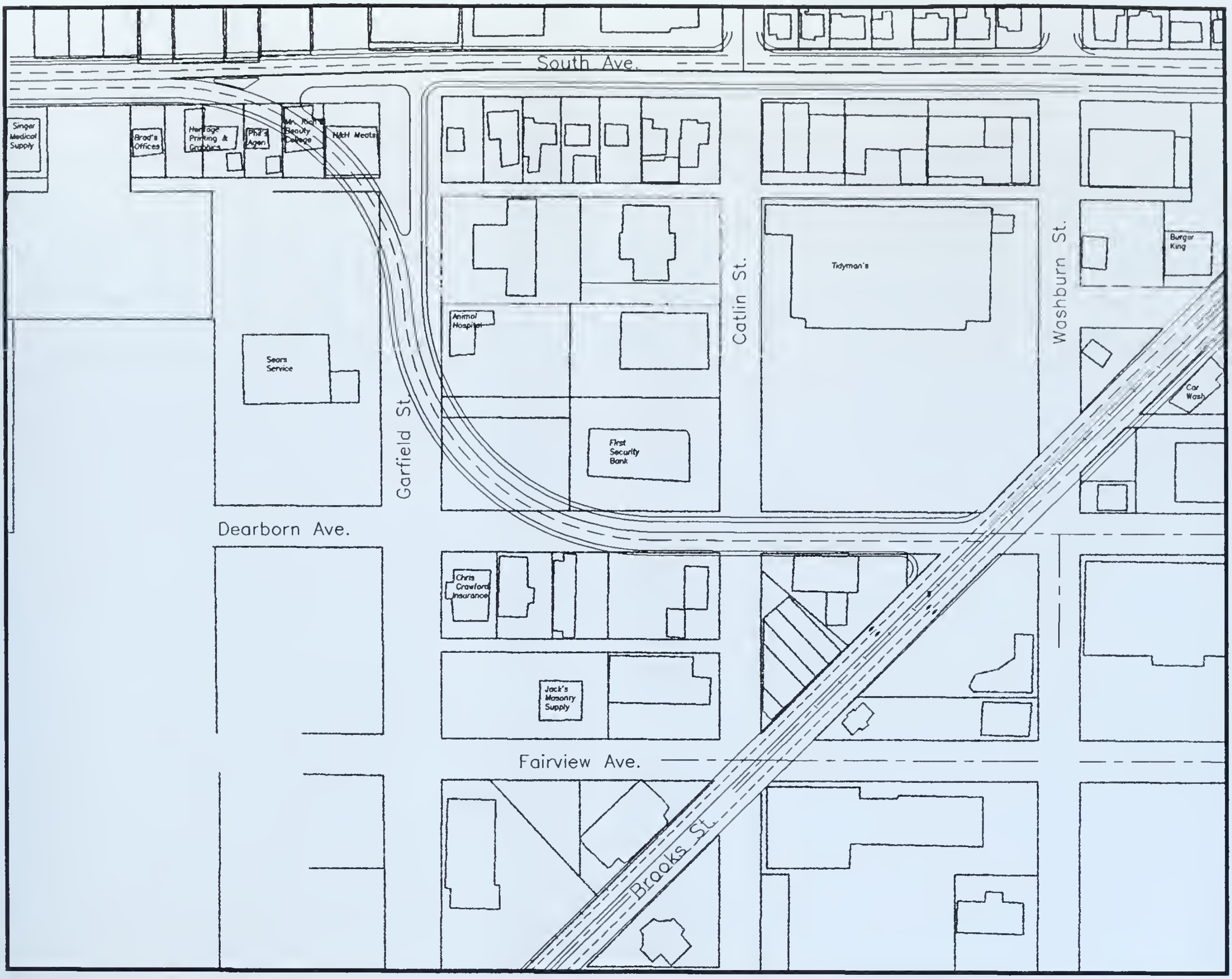
The cost for construction ($0.05M), and engineering ($0.01M) for this alternate of minimizing ROW impacts is estimated at $0.06M.

Alternate W3

Alternate W3 for the South Ave. West Realignment utilizes Garfield St. and Dearborn Ave. between South Ave. and Brooks St. (Figures 2-5 and 1-6 for cross section). Four or five commercial properties would need to be relocated. A new intersection of Dearborn and Brooks would occur midblock between Catlin and Washburn. The cost for construction ($0.8M), right-of-way ($0.9M), and engineering ($0.17M) for this alternate is estimated at $1.87M.

Alternate W4

Alternate W4 for the South Ave. West Realignment takes westbound traffic on South Ave. along a new route that uses Garfield St. south and then accesses Brooks St. southbound (Figures 2-6 and 1-6 for cross section). The new route would require relocation of two or three commercial properties to create a free right turn onto Garfield St. It would continue south on Garfield using the existing right-of-way to approximately Fairview Ave. It would access Brooks at Fairview Ave. And Catlin St. Landscaping and sidewalks would be constructed along the entire new route. Traffic moving from South Ave. could access



SOUTH AVENUE WEST REALIGNMENT (W3)

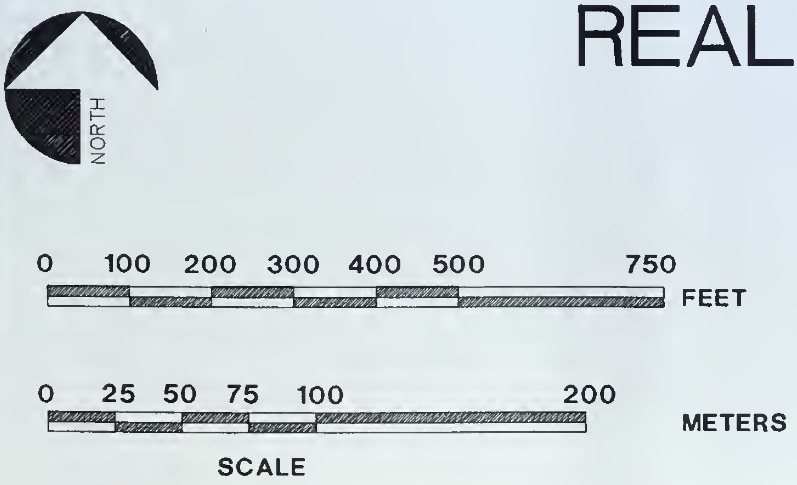
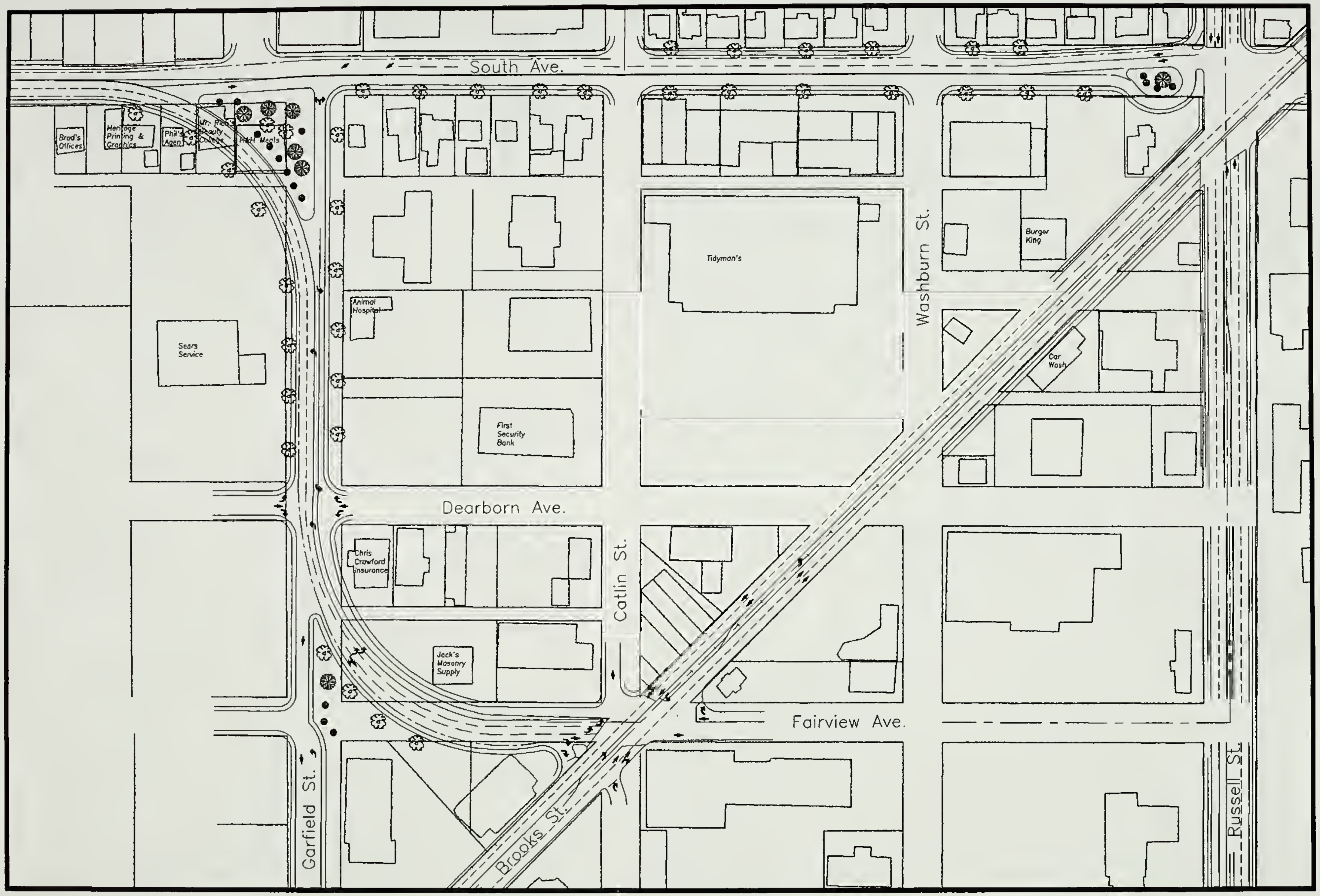
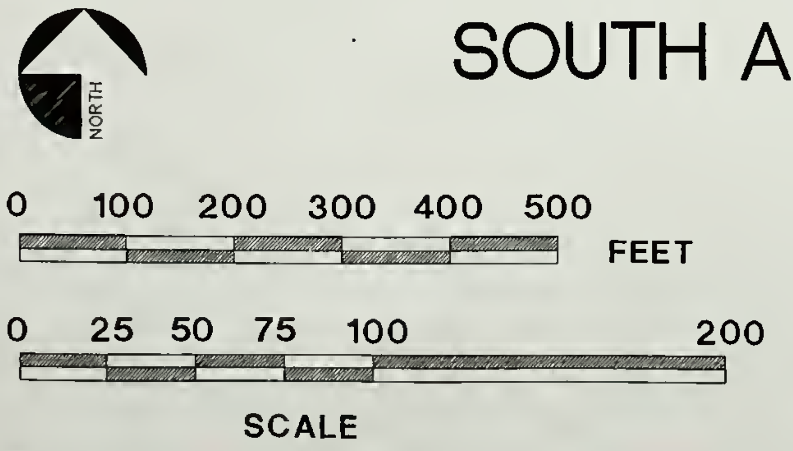


Figure 2-5



SOUTH AVENUE WEST REALIGNMENT (W4)



METERS

Figure 2-6

Brooks St. or Catlin St. or continue on to Russell St. The cost for construction ($0.9M), right-of-way ($1.1M), and engineering ($0.2M) for this alternative is estimated at $2.2M.

Alternate W6

Alternate W6 for the South Ave. West Realignment primarily utilizes Dearborn Ave. between South and Brooks (Figures 2-7 and 1-6 for cross section). New right-of-way would be acquired in a northwest to southeast diagonal path between South Ave. and Dearborn Ave. which would affect primarily open commercial yards. A new intersection of Dearborn and Brooks would occur on Dearborn at the east end of the Catlin and Washburn block. The cost for construction ($1.2M), right-of-way ($0.5M), and engineering ($0.23M) for this alternate is estimated at $1.93M.

Alternate E3

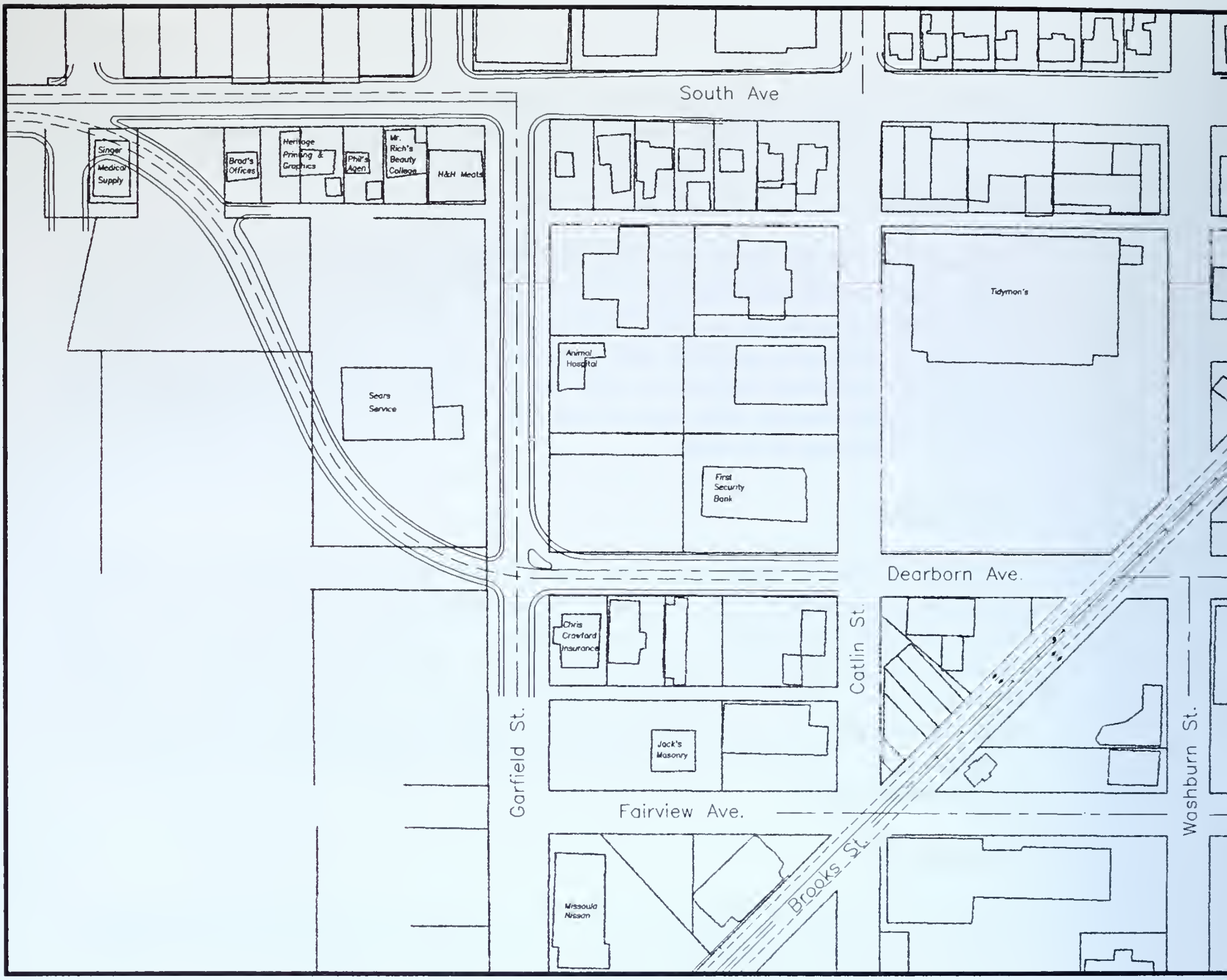
Alternate E3 for the South Ave. East Realignment diverts from South Ave. between Stephens Ave. and Regent St., crossing six commercial properties before it connects with Brooks St (Figures 2-8 and 1-6 for cross section). A new signaled intersection is proposed on Brooks St. between Central Ave. and Sussex Ave. similar to the alternative E4. Regent St. is utilized for a small central portion of the new route. A new intersection is proposed with Brooks would occur midblock between Catlin and Washburn. The cost for construction ($0.7M), right-of-way ($2.9M), and engineering ($0.15M) for this alternate is estimated at $3.75M.

Alternate E4

Alternate E4 (Figure 2-9) for the South Ave. East Realignment allows traffic eastbound on South Ave. to access Brooks St. northbound via new right-of-way and Sussex Ave. The new route would traverse the open field behind the School District building and feed into Sussex Ave. at Stephens Ave.. The right-of-way widening along Sussex may require relocation of three residences and one commercial property. At Regent St. the new route would cross an additional commercial property to form a new intersection with Brooks St. midblock between Central and Sussex. Local traffic using Sussex Ave. or Regent at both the east and west or north sides of the new route would be provided a wider right-of-way with a cul-de-sac, landscaping and walking paths and sidewalk. Stephens Ave. traffic would remain as the existing, except that the new route would allow a left turning lane and a free right turn southbound to Stephens. The cost for construction ($1.4M), right-of-way ($1.2M), and engineering ($0.2M) for this alternate is estimated at $2.8M.

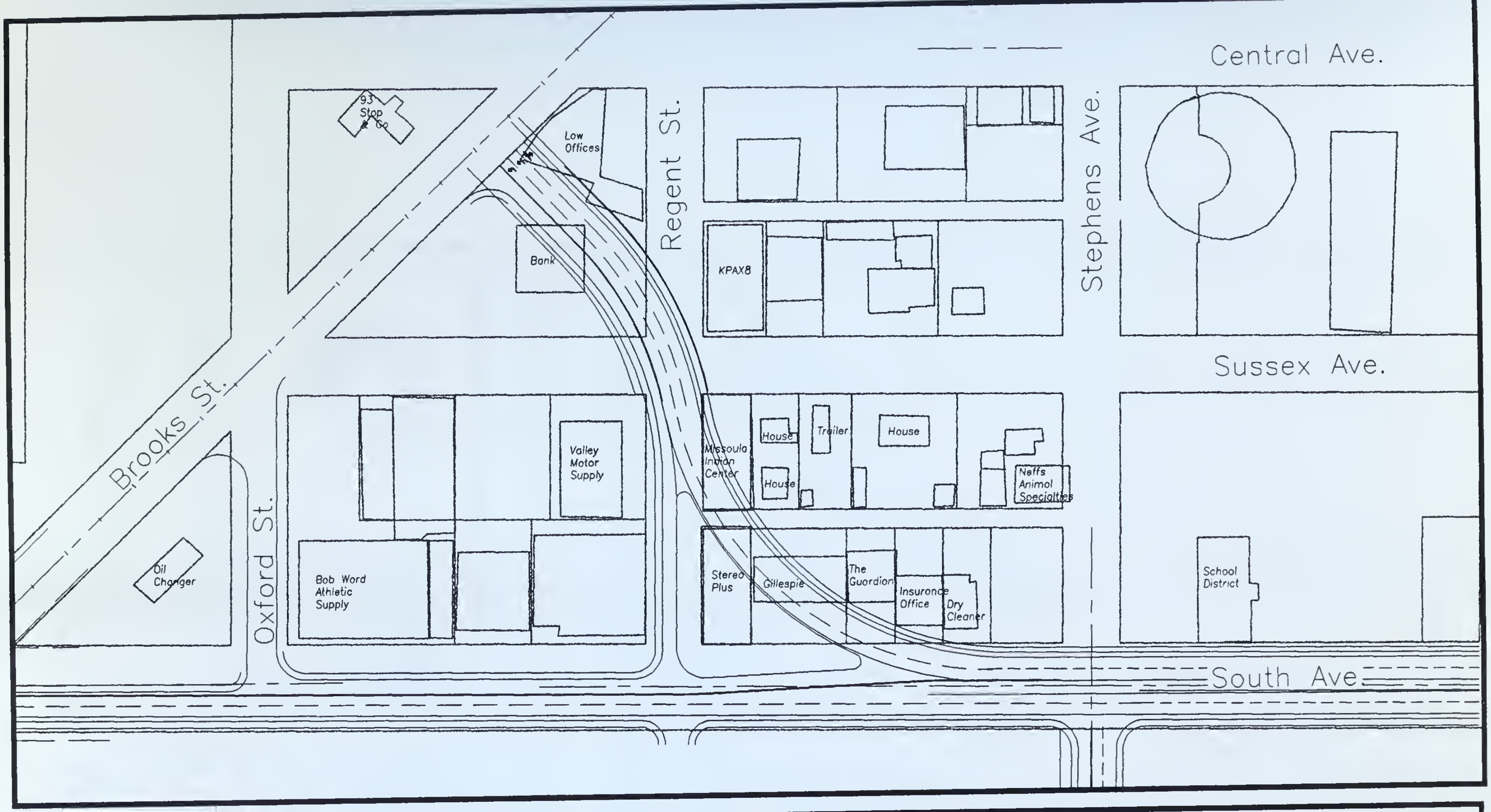
ALTERNATIVES CONSIDERED BUT REJECTED

A description of the process used to develop and screen alternatives is provided as Appendix A of this report.



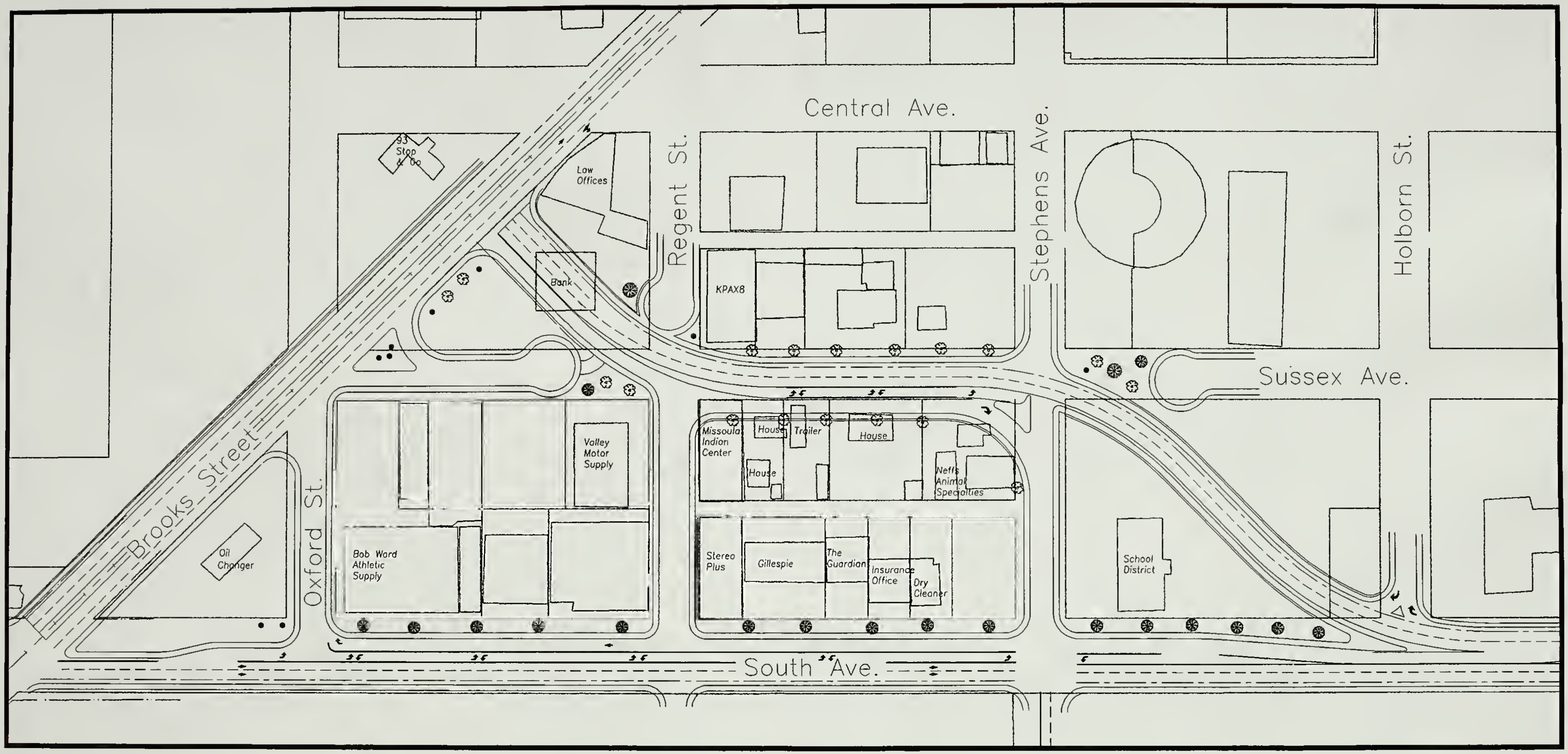
SOUTH AVENUE WEST REALIGNMENT (W6)

Figure 2-7



SOUTH AVENUE EAST REALIGNMENT (E3)

Figure 2-8



SOUTH AVENUE EAST REALIGNMENT (E4)

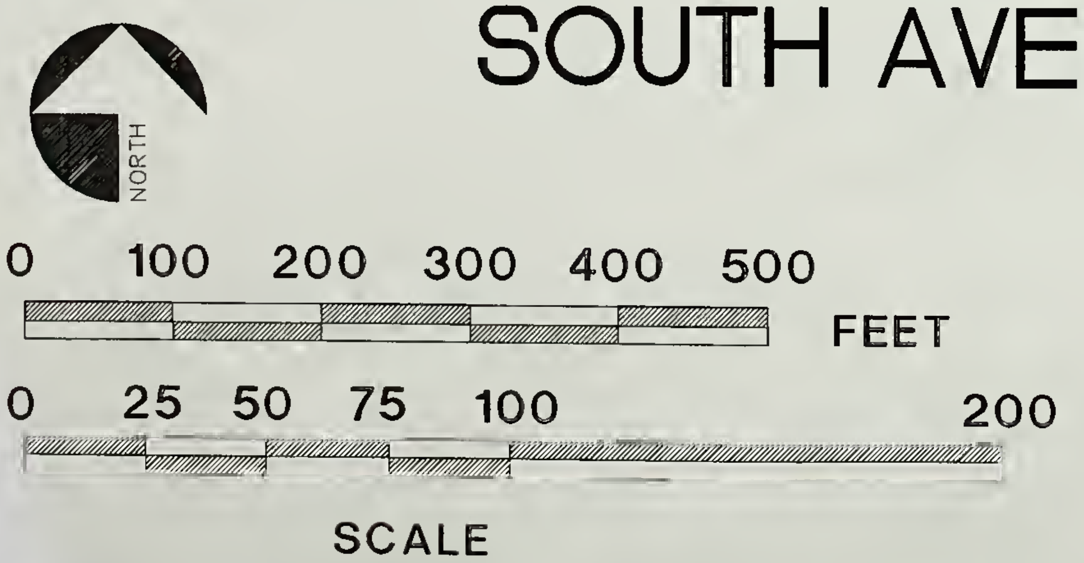


Figure 2-9

Traffic Demand Management Alternative

Traffic Demand Management (TDM) would attempt to reduce traffic congestion and vehicle emissions through Brooks/South/Russell by changing modes of transportation used by the public city-wide. More people would use buses, carpool, or ride bicycles which would decrease the number of single occupancy vehicles (SOVs) moving through the intersection.

Traffic modeling results indicated that under either TDM scenario congestion would remain at the intersection, thus current air quality conditions would persist; therefore, this alternative would not meet the project's purpose and need.

The TDM alternative was eliminated as a stand alone alternative because it does nothing to resolve traffic congestion or air quality problems at the intersection. Other potential impacts would also need to be evaluated associated with constructing new facilities (e.g., bus barns, etc.) or subsidizing the bus program (i.e., taxes to cover local costs).

Roundabout Alternative

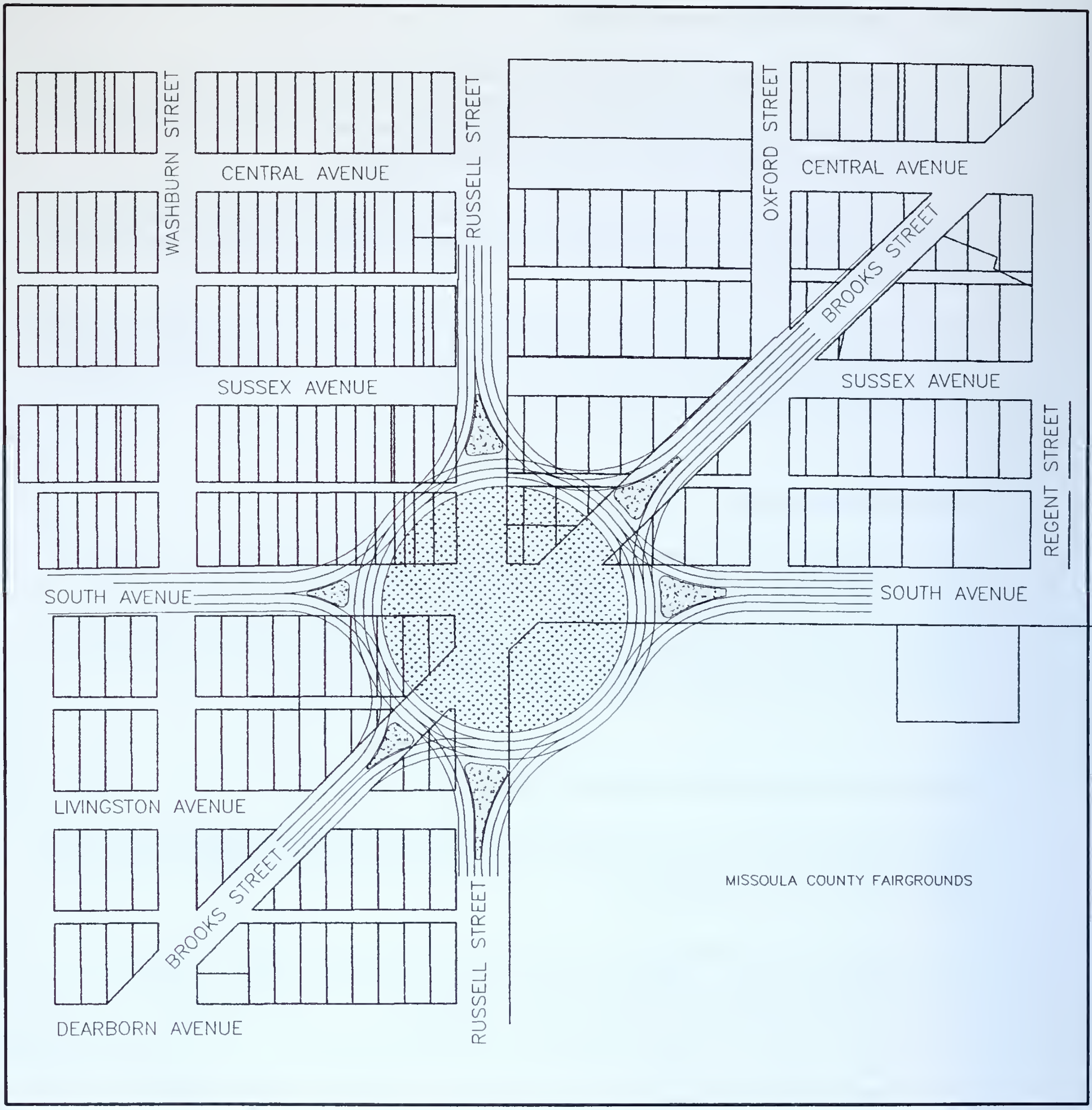
The roundabout alternative (Figure 2-10) was considered an important option by the members of the public attending the November 1993 scoping meeting in Missoula. This alternative offers an "at-grade" solution, which most of the public agreed was most compatible with the visual image of Missoula. A number of roundabout sizes and configurations were analyzed. The roundabout was eliminated from consideration because it did not provide adequate capacity for projected traffic volumes and meet the objectives of the purpose and need for the project.

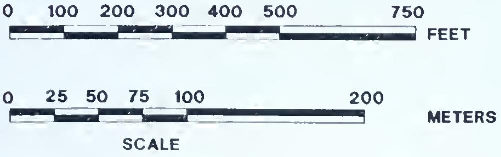
System Improvements to Surrounding Arterials

Improvements to the surface street system outside of the intersection was suggested by the public in the November 1993 scoping meeting as having potential to reduce traffic at the intersection. The system improvements considered were:

- Extension of Stephens from S.W. Higgins to South Ave. - construct new road.
- Pattee Creek Drive and Ernest Ave. from Higgins to Reserve - roadway extension.
- Add west connection to Southgate Mall on Dearborn St. - roadway extension.
- Extension of 5th/6th couplet to Reserve St. - roadway extension.
- Improve South 14th Ave. and Mount Ave. from Higgins to Reserve - realignment.
- Bancroft from Pattee Creek Drive to Mount Ave. - intersection improvements.
- Extension of Johnson and Schilling from Brooks to Mount
- Higgins, S.W. Higgins and 39th St. from South Ave. to Reserve St. - widening.

After conducting traffic modeling for each of these proposals, most of these suggestions were eliminated because they were operationally infeasible or did not meet the purpose and need of the project. The only alternatives that had any appreciable benefit to the intersection were





ROUNDABOUT ALTERNATIVE

Figure 2-10

improvements specific to the intersection such as grade separation of Brooks St. Ninety percent (%) of the benefits were gained from improvements at Brooks/South/Russell whereas only 10% were derived from system improvements.

As an extension of the system-wide modeling, improvements at Higgins and Reserve were combined with an overpass or underpass into a new "combination alternative".

The system improvements alternative was rejected as a stand alone alternative because it could not be projected to meet the project purpose of relieving congestion at the Brooks/South/Russell intersection.

Urban Interchange Alternative

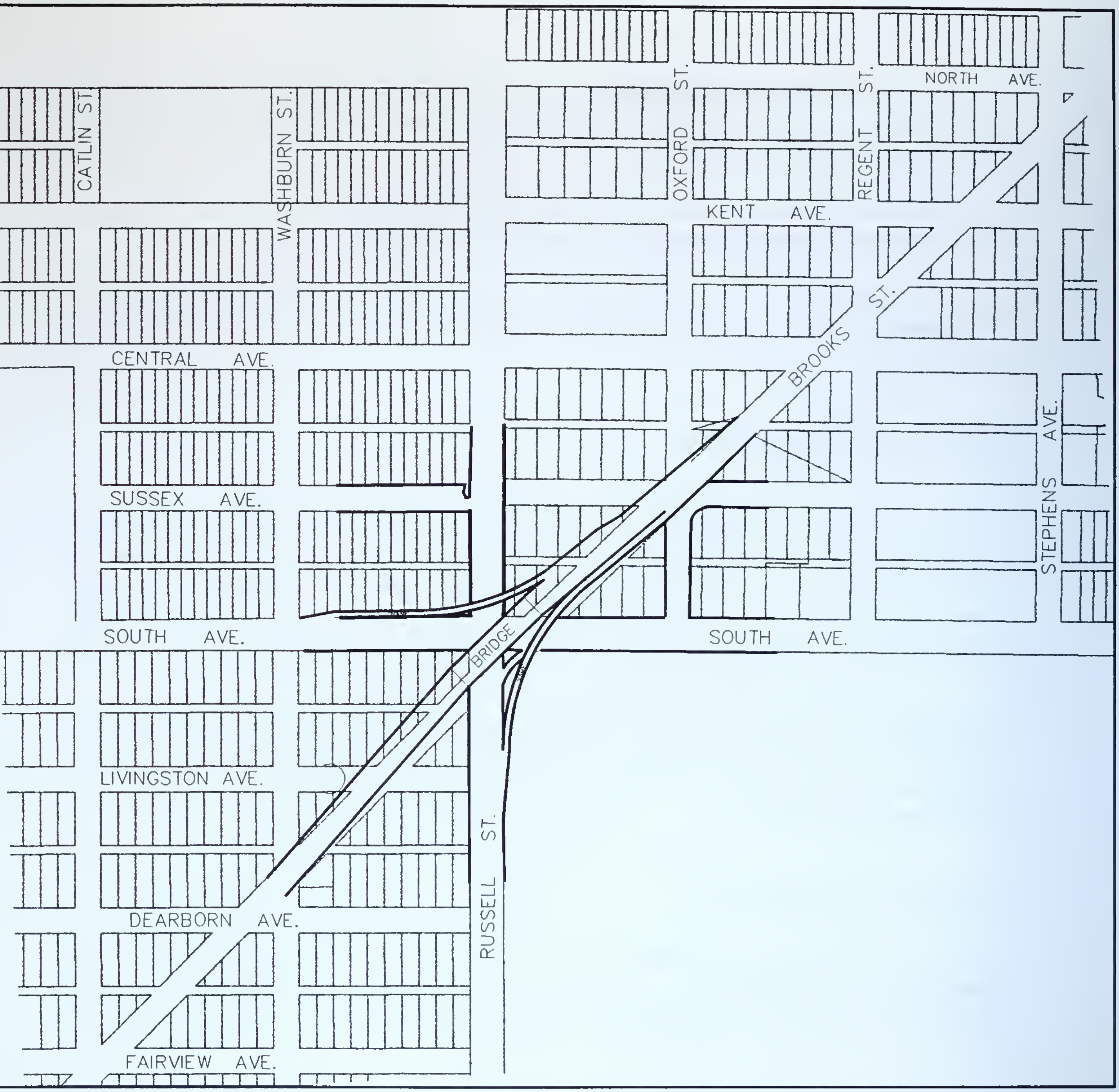
The idea of an urban interchange evolved from the November 1993 public scoping meeting. The engineering team developed and evaluated many different interchange concepts for Brooks/South/Russell (Figure 2-11). The design concepts were to have the same turning movements as the existing intersection, to provide partial access from South Ave. to Brooks St., and close Russell St. to traffic either north or south of South Ave. Closure of Russell to through traffic would be required in the vicinity of Brooks/South/Russell due to conflicts with entry/exit ramps to Brooks St.

This alternative was rejected because of 1) the high costs, 2) failure to improve air quality (due to stopping and starting), 3) poor traffic flow (LOS D), 4) extensive right-of-way requirements, 5) visual impacts of the structures (i.e., overpass and ramps), and 6) high social and economic effects on adjacent property values.

Grade Separation Alternatives

Two major grade separation alternatives with various design options to try and avoid some of the identified environmental effects evolved from the original suggestion of an overpass in the 1985 Missoula Transportation Plan and the public scoping meeting in November 1993. Each alternative was developed to a conceptual level and was subjected to traffic, air quality and noise modeling.

A public information meeting was held in December 1994 to present and discuss the overpass and underpass as those that best met the project purpose and need. Public opposition to the overpass and underpass alternatives was substantial, with over 76% of the 273 commentors preferring no action. An additional 321 comments were received in the mail, with 94% preferring an overpass and underpass never be constructed.



URBAN INTERCHANGE ALTERNATIVE

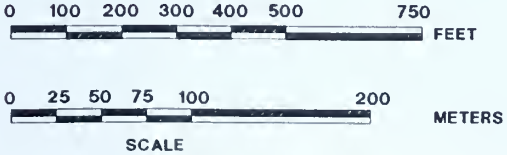


Figure 2-11

Overpass Alternatives Grade Separation

This alternative consisted of constructing an overpass on Brooks St. over a conventional four-way approach intersection of Russell St. and South Ave. (Figure 2-12). The overpass would be a through street with no turning movements at the intersection. The intersection below the overpass would require that the traffic signals be upgraded and realigned for Russell St. and South Ave. only. The original concept was to construct the overpass in the existing Brooks St. right-of-way immediately adjacent to the County fairgrounds.

To avoid the potential for high impact on parkland, and historical and Section 4(f) issues, a second design concept was evaluated that shifted the centerline of the overpass toward the north away from County fairgrounds.

Although this alternative met the LOS criteria and had positive results in relieving air quality impacts, this alternative was eliminated from further consideration because 1) a longer structure overall was required to accommodate the higher span which would affect access and road closure along Brooks, 2) the cost for extensive right-of-way acquisition would be prohibitive, and 3) technical difficulties in the placement of the massive support members.

In addition, this alternative was opposed by a majority of the public attending an informational meeting in December 1994.

Underpass Alternative Grade Separation

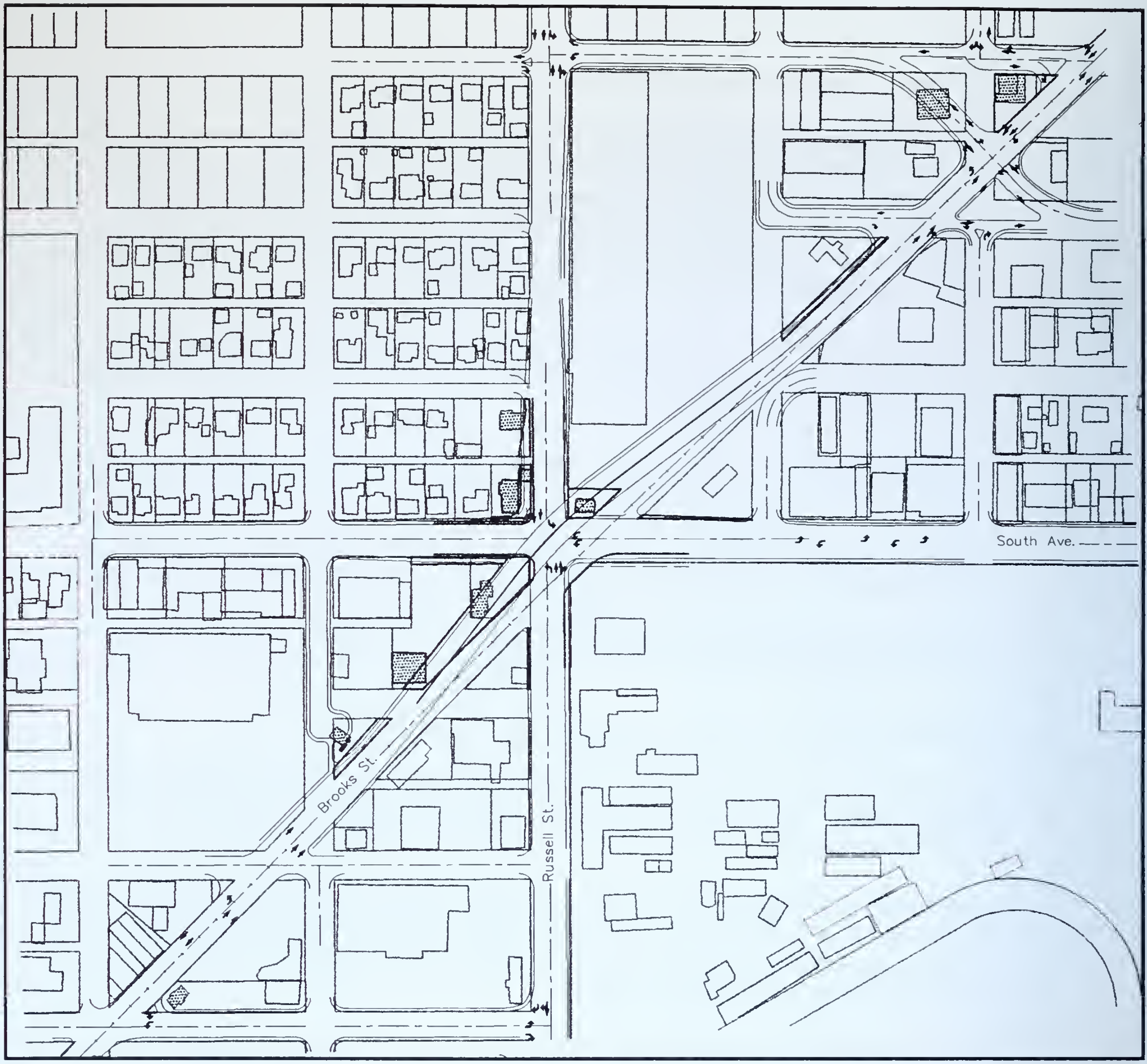
This alternative involved an underpass on Brooks St. using the existing easement. Traffic flows on Reserve St. and South Ave. would continue above the underpass with a four way signal at the intersection (Figure 2-13).

The benefits of the underpass would be similar to the overpass, except for less improvement to air quality. Environmental concerns were somewhat greater in that substantial excavation had the potential to affect the groundwater and waste material and sediment control would be necessary to protect the Missoula Aquifer.

As stated above, this alternative was presented as a viable alternative in the public workshop on December 15, 1994; however, it was rejected by the City due to public opposition.

Combination Alternative

As discussed in the System Improvements Alternative section, this alternative was derived from the traffic modeling performed for the system improvements at Higgins and Reserve Sts. It involves combining an overpass or underpass at the Brooks/South/Russell intersection with improvements of Higgins St./39th St. from South 5th St. to U.S. 93 and North Reserve St. from South 3rd St. to I-90. Traffic signals would be installed where appropriate to meter the flow of traffic and gain maximum effectiveness.



GRADE SEPARATION ALTERNATIVE OVERPASS

NORTH

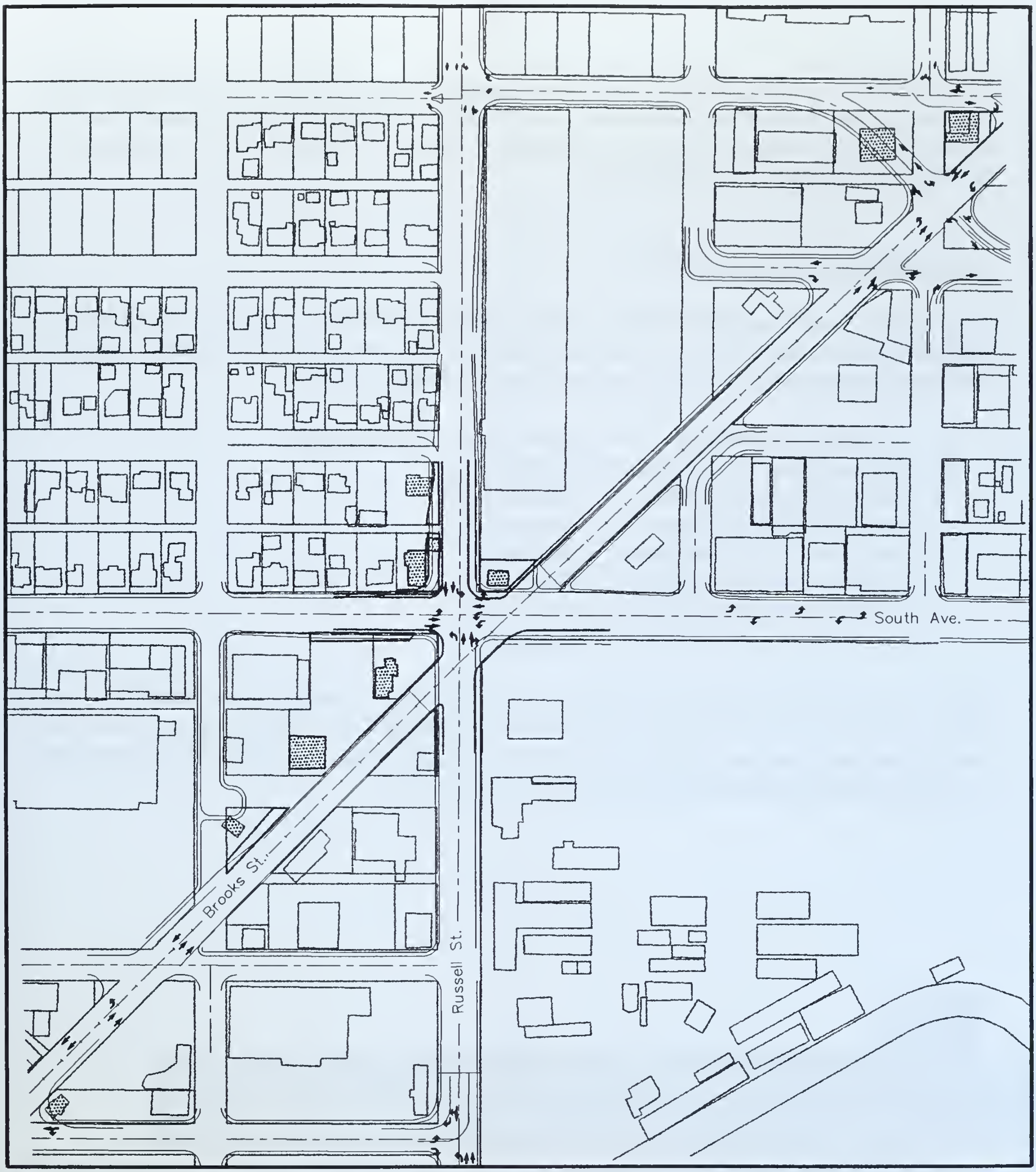
▨ Building to be Demolished

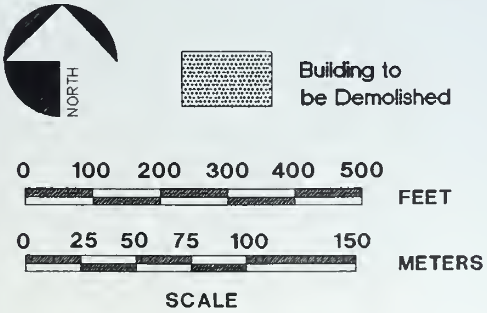
0 100 200 300 400 500 FEET

0 25 50 75 100 150 METERS

SCALE

Figure 2-12





GRADE SEPARATION ALTERNATIVE UNDERPASS

Figure 2-13

This alternative was eliminated from further consideration because 1) costs were considerably higher than any other alternatives considered and 2) carbon monoxide (CO) concentrations for Brooks/South/Russell showed little to no improvement when the combination improvements were modeled with the overpass and underpass.

Relocate South Avenue Alternatives

After the City's grade separation alternatives were no longer viable, the Design Consultant retained a transportation planning firm to evaluate other alternatives involving South Ave. The South Ave. Realignment alternatives that were considered and eliminated include:

- Relocate East Bound Movements from South Ave. Alternative
- Relocate South Ave. Left Turns Alternative (1)
- Relocate South Ave. Left Turns Alternative (2)
- South Ave. West Realignment - Alternate W1
- South Ave. West Realignment - Alternate W2
- South Ave. West Realignment - Alternate W5
- South Ave. East Realignment - Alternate E1
- South Ave. East Realignment - Alternate E2

After a series of traffic evaluation exercises and CAC and TAC meetings, these alternatives were rejected for both technical design difficulties and because of opposition from the citizen and technical advisory groups. Please refer to Chapter 4, Comments and Coordination and Appendix A, Alternatives Development and Screening for further detail.

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

LAND JURISDICTION AND USE

The land use inventory identified current land jurisdiction, existing land uses, and future land uses within a kilometer (half mile) of the intersection. The inventory was compiled by reviewing published public documents, studying available maps, and verifying information with ground reconnaissance and aerial photography. The key agencies and organizations that were contacted are listed in Chapter 4, under Agency Contacts.

Affected Environment

Land Jurisdiction and Ownership

Land jurisdiction depicts the limits of administrative or jurisdictional control maintained by the major landowners within the study area.

The majority of the land is private, comprised of residences, commercial businesses, and undeveloped parcels. The remainder of the property is owned by the City of Missoula (parks and schools), the U.S. Government (Main Post Office), and the County of Missoula (Western Montana Fairgrounds).

Existing Land Use

Residential

Residential areas near Brooks/South/Russell include single family homes, multi-family dwellings, apartments, and established subdivisions. Residences are primarily located northwest of the intersection and includes 12 houses per block.

Commercial

Commercial development is concentrated northeast and southwest of the intersection consisting of shopping malls, strip development and storefront businesses. Commercial enterprises include small retail businesses, automotive repair shops, restaurants, bars, a dentist, hair stylist, bowling alley, a bank, a mortgage company, convenience stores, gas stations, retail office spaces, two car washes, a video store, two TV stations, two pet supply stores, two supermarkets, and a furniture store. Most of these businesses can be found in one of the six malls near the intersection, which includes Caras Plaza, Trempers Mall, South Center, Holiday Village Shopping Center, Fairway Shopping Center, and Southgate Mall (Figure 3-1). Parking areas are primarily located in front of these enterprises and are accessed from Brooks, South, Russell, Kent, Stephens, and off Catlin.

Industrial/Business Parks

No large industrial facilities, processing plants, or manufacturing plants are located in the project vicinity. Montana Power Company has general offices and a construction yard off of Russell St., which is a kilometer (one half mile) to the north of the intersection. Conlins Furniture at 1600 W. North Ave also has a warehouse near this location.

Farmland/Vacant Land

No agricultural or State Important Farmlands are located in the project area.

Vacant land is located behind the First Christian Church-Disciples of Christ at 2701 S. Russell and across South Ave. in front of the Missoula Vocational Technical School (Figure 3-1), and behind the Missoula School District building.

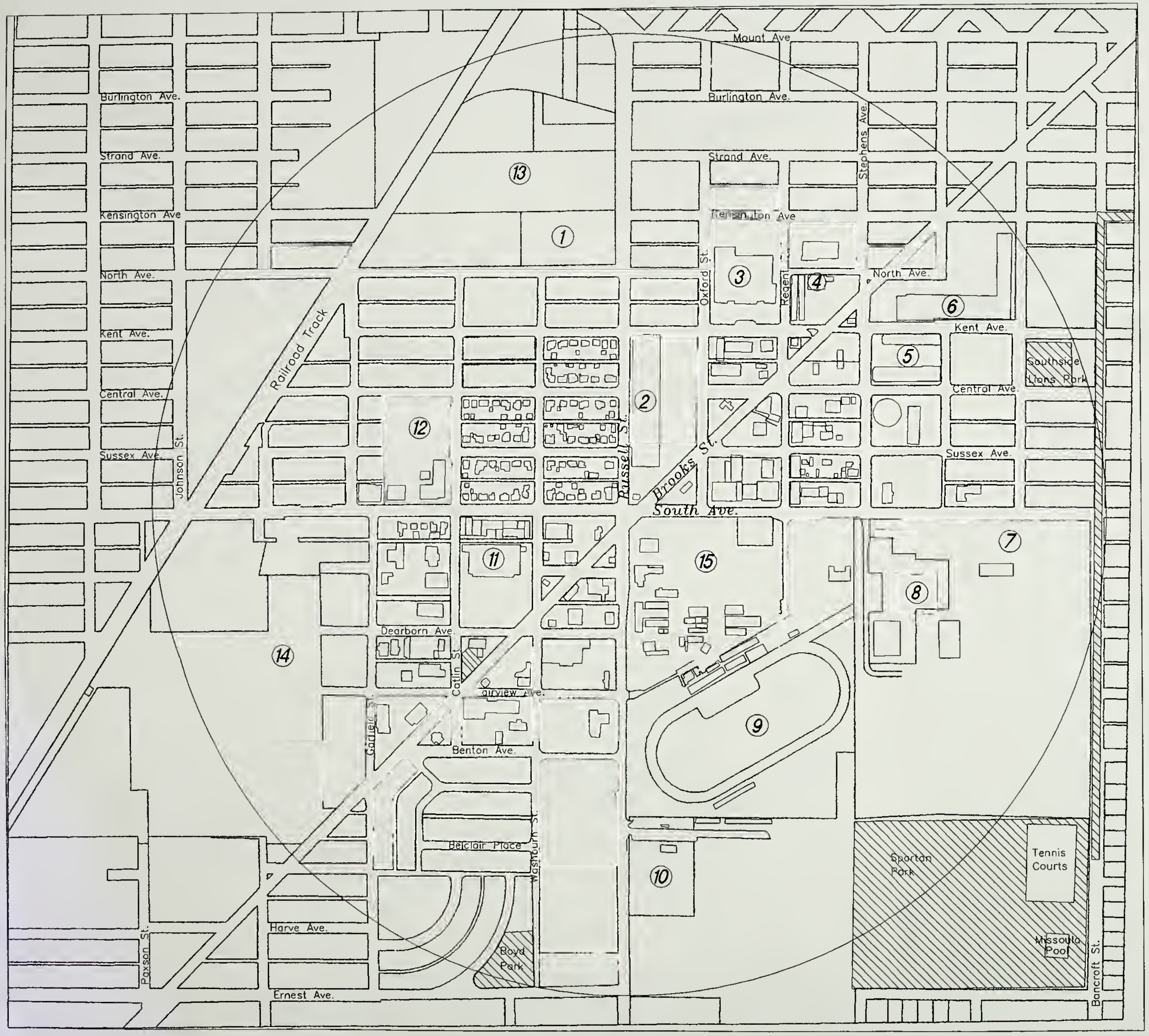
Public and Quasi-Public Facilities

Public and quasi-public facilities include governmental operations and functions or facilities that are open to the public such as police or fire stations, churches or schools.

The Missoula Police and Missoula City Fire departments service the Brooks/South/Russell Intersection. Missoula Fire Stations #3 services south of South Ave.; Station #2 services northeast of South/Russell Intersection. Station #4 services the northwest quadrant of the Brooks/South/Russell Intersection between Russell and South. However, these service vehicles do cross district boundaries including the Brooks/South/Russell Intersection. Ambulances are located at both hospitals and service all of the city of Missoula. Any calls southeast of the Trempers Mall would require emergency vehicles to cross the Brooks/South/Russell Intersection.

Medical Facilities include two large hospitals, Community Medical Center (2827 Fort Missoula Rd.) and St. Patrick Hospital (500 West Broadway). Community Medical Center is located 2.4 kilometers (1.5 miles) from the Brooks/South/Russell intersection. The hospital is a full-service emergency medical service facility with 123 patient beds, specializing in obstetrics facilities and rehabilitation. St. Patrick Hospital, located at 500 West Broadway, is 3.2 kilometers (2 miles) from the intersection. This hospital is a full service and acute care facility with 215 patient beds, specializing in cardiology and orthopaedic surgery.

Brooks/South/Russell intersection falls within the Missoula County Public School District #1. Schools in the project area include Russell Elementary School (with 527 students), Jefferson Elementary School, Washington Middle School (556 enrollment), and Sentinel High School (1,105 enrollment). Jefferson is a school for the specially gifted and talented and is temporarily housing 6th graders and the music department from Porter School.



EXISTING LAND USE

Legend:

Buildings

▨ Land & Water Conservation Fund Sites

1. McLeod Park
2. Trempers Mall
3. Main Post Office
4. Fairway Shopping Center
5. South Center
6. Holiday Village Shopping Center
7. Sentinel High School
8. Missoula Vocational Technical School
9. Race Track
10. YMCA
11. Caras Plaza
12. Jefferson Grade School
13. Industrial Land
14. Southgate Mall
15. Fairgrounds

NORTH

0 500 750 1000 FEET

0 100 200 400 METERS

SCALE

Figure 3-1

The Missoula School District has passed a bond issue to add a new grade school, Chief Charlo, near the South Hills Area. The school would house kindergarten through 5th grade and reduce attendance levels at Russell Elementary. No schools are planned for any closures, expansion, or remodeling.

Four churches within the study area include the Open Door Baptist Church (2801 S. Russell), First Christian Church-Disciples of Christ (2701 S. Russell), Immanuel Lutheran Church (830 South Ave. W.), and the Seventh Day Adventist Church (800 South Ave. W.). Vine Life Free Methodist Fellowship also meets at Sentinel High School.

The Missoula Manor Retirement Home, located at 909 W. Central Ave., provides one bedroom apartments, dining room facilities, housekeeping and other retirement services.

Other public buildings include the YMCA (3000 S. Russell), Missoula Vocational - Technical School (909 South Ave. W), and the Missoula Main Post Office (between Oxford and Regent on 1100 West Kent Ave).

Utilities

Brooks St. is a major route for underground and surface utilities. A detailed description of the utilities potentially affected at the proposed Brooks/South/Russell intersection is outlined in the January 1986, "Widening and Overlay of Brooks Street" (MDT, 1986), which is available for review at the MDT Missoula District Headquarters, Missoula, Montana. The primary utilities located in the project area are owned and operated by the following companies:

- Montana Power Company - gas and transmission lines
- Missoula Electrical Cooperative - transmission lines
- U.S. West Communication - telephone lines and buried cable
- TCI Cablevision of Missoula - buried cable lines
- Mountain Water Company - water lines
- Missoula County Residential Sewer Improvement District #1 - sanitary sewers

Specific locations of utilities will need to be determined after the selection of the preferred alternative from individual property ownership maps.

Parks and Recreation

Park and recreation sites include existing parks, recreation areas, bicycle routes and the county fairgrounds. Neighborhood and City parks include Boyd, Playfair, Southside Lions, McLeod, and Spartan Park. Playground equipment and ballfields are also located at the schools identified in the Public/Quasi-Public category. The parks are used for baseball, soccer, horseshoes, volleyball, and other various recreational sports. None of the listed parks are adjacent to the intersection or proposed alternatives. The Missoula County Fairgrounds are adjacent to the Brooks/South/Russell intersection and are open to the public for the annual county fair and special events. There are no designated bicycle routes within the project area, although roads like Russell, South, Stephens, and Bancroft receive high use by bicycles.

There are sidewalks in place along one or both sides of approximately 55% of the project area. The majority of these sidewalks, including curb and gutter, are in the residential area, on the north side of the fairgrounds, around the Tidymans store, and around the Bowling Alley on Washburn St. and Dearborn Ave..

Zoning

Zoning is a method for local municipalities and counties to control land uses. Land use controls include the specification of land uses allowed, the intensity or density of the uses, and standards placed on built structures.

The zoning classifications for the Brooks/South/Russell study area were reviewed and combined into common categories as shown in Figure 3-2. The designations are generally compatible with those of the existing land use.

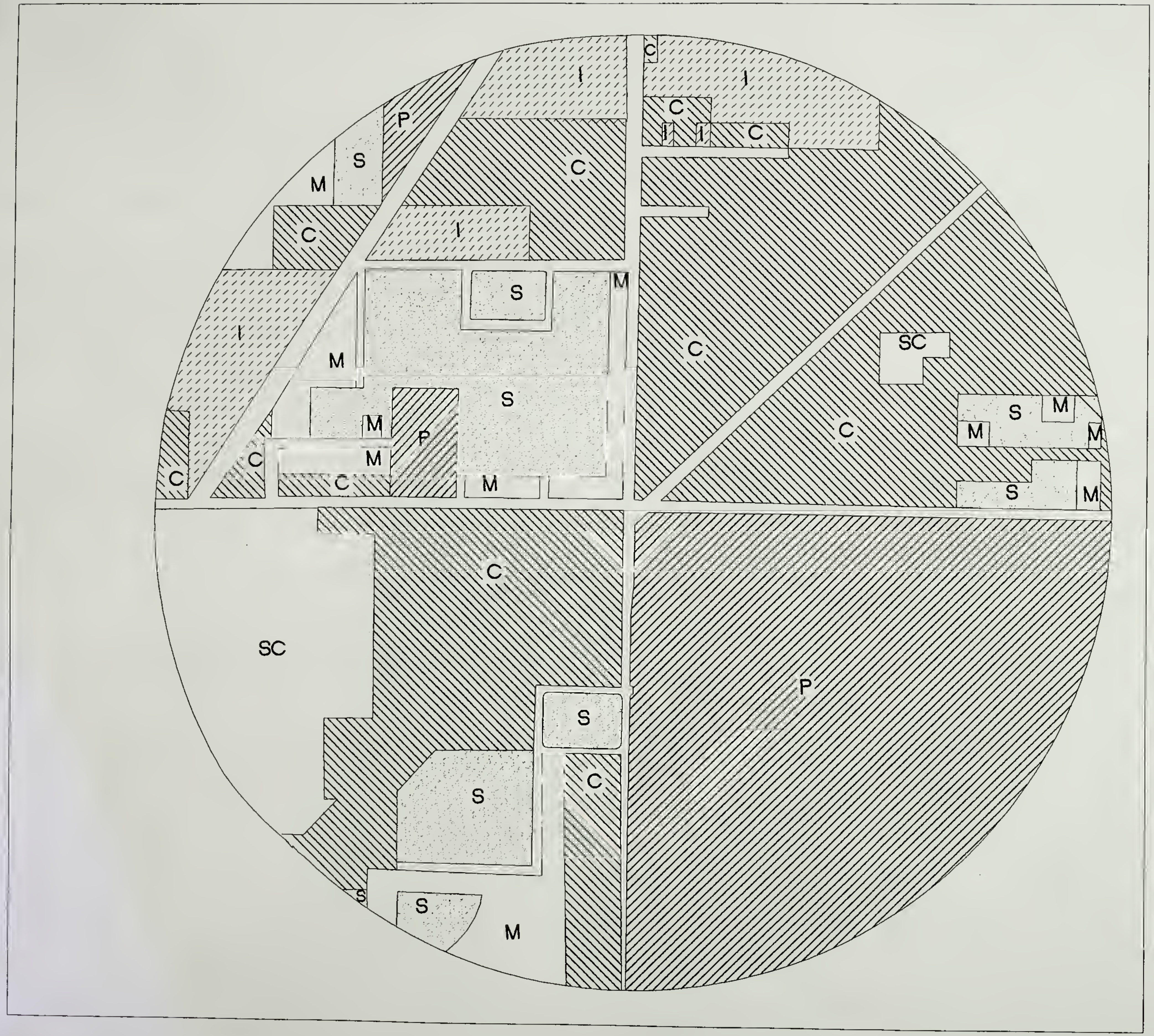
Future Land Use

Missoula County adopted the Updated *Missoula Urban Comprehensive Plan* in (1990). Since the original Plan *Missoula: A Policy Guide for Urban Growth* (1975) land uses have changed, population has increased, and goals and policies have changed.

No new residential, commercial, or public developments are proposed within the project study area at this time.

The *Missoula Urban Transportation Plan* (1985 Update) designates broad land use categories for some roads/intersections around the Brooks/South/Russell Intersection. A grade separation was recommended for the Brooks/South/Russell Intersection with possible funding through federal aid and local funds. This Plan is currently being updated with a scheduled release date of 1996.

Missoula has produced guidelines to promote bicycle commuting as an alternative mode of transportation. The *Guidelines For Creating a Non-Motorized Travel Network in the Greater Missoula Area* encourages the use of bicycles as a part of the transportation system. Bicycle recreation would continue to be hindered throughout the intersection and cause more safety problems. According to the "Missoula Non-Motorized Transportation Plan" formulated in January of 1994, a planning process was initiated to help implement non-motorized travel. The inventory identified Brooks St. as a major north-south arterial for Missoula and a formidable barrier by impeding the travel of bicyclists and pedestrians.



CURRENT ZONING

Legend:

- C Commercial/Office
- P Public Lands & Institutions
- ▨ Industrial/Business Park
- SC Shopping Centers
- S Single Family Residential
- M Multi-Family Residential/Townhomes

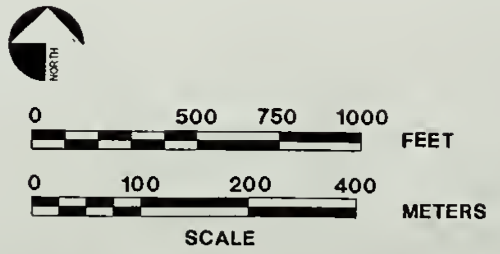


Figure 3-2

The Missoula Parks and Recreation, in cooperation with the County Park Board and Rural Planning Office, is currently updating the "Missoula County Parks, Recreation, and Open Space Plan". The plan will be completed by the end of the fiscal year (summer of 1995). Changes within this plan include an additional soccer field and inline skating rink to be placed north of the City Municipal Pool at Playfair Park. Other policies and guidelines include revising recreation needs to accommodate population increases and demands.

Section 6(f) Land, Water and Conservation Fund Properties

Section 6(f) of the Land Water and Conservation Fund (LWCF) Act stipulates that "no property acquired or developed with LWCF assistance shall be converted to other than public outdoor recreation uses without the approval of the Secretary of the Interior and the substitution in accordance with the 1993 Montana Statewide Comprehensive Outdoor Recreation Plan (SCORP) of other recreation properties of at least equal fair market value and reasonable equivalent usefulness and location." No lands within designated parks will be used for this project. Federally assisted LWCF sites include Boyd Park (#219), Spartan Park (#159), Southside Lions Park (#259), and the Missoula Bikeway System (#269). All sites are less than a half kilometer (1/4 mile) away from the intersection and are shown in Figure 3-1. No Section 6(f) LWCF properties would be affected under any of the considered alternatives.

Environmental Consequences

Direct impacts to land use may include the acquisition of land within the proposed alternative right-of-way, which may result in the relocation of residences, access points, and utilities.

Temporary impacts are described under Construction Related Impacts.

No-Action Alternative

Under the No-Action Alternative, land uses in the study area would not change. No private, commercial, or state land would be acquired for the right-of-way purposes.

Potential negative impacts to existing land uses would be caused by increasing traffic volumes through the Brooks/South/Russell Intersection and related congestion of access to adjacent land uses would continue. Future expansion of commercial and quasi-public land uses could limit the use of adequate high volume roadway and access points between Missoula and the Bitterroot Valley.

Planned and proposed improvements on the sidewalk improvements needed for creating a non-motorized travel network could be delayed and funds would be forfeited.

South Avenue Realignment

The potential impacts to existing land uses are outlined in Table 3-1.

TABLE 3-1
Properties Partially or Wholly Affected by Each Alternative

South Avenue East Realignment		
Alternate E3	*Alternate E4*	*Alternate E5*
Realty Company	School District Property (Open Space)	School District Property (Open Space)
Stereo Plus	Old School Building	Old School Building
Missoula Indian Center	3 Residences on Sussex St. (south side)	
Bank	Bank	
Law Offices	Mobile Home	
Stop and Go	Stop and Go	
Parking for KPAX8		

South Avenue West Realignment			
Alternate W3	*Alternate W4*	*Alternate W6*	*Alternate W7*
Printing and Graphics	Masonry Supply Yard	Medical Supply	Masonry Supply Yard
Insurance Agency	2 Insurance Agencies	Sears Service Yard	Insurance Agency
Beauty College	Beauty College		Beauty College
Butcher	Butcher		Butcher
Sears Service Yard			
Animal Hospital Yard			

Intersection Improvements
4 Commercial Establishments

Right-of-way and new roads would require that commercial, residential and quasi-public facilities be relocated. Utilities within the existing right-of-ways would be relocated as necessary. These potentially include US West Communications, Montana Power Company gas lines and distribution powerlines, Missoula County Residential Sewer Improvement District #1, Mountain Water Company, and TCI cablevision. Existing permitted signs would also be relocated.

The sidewalks, if built as proposed, would provide a safe, efficient, and properly designed non-motorized circulation system for pedestrians and bicycle use. With the proposed Brooks/South/Russell Intersection improvements, new sidewalks and bike lanes would be incorporated into any new design as stated within this amendment to the Missoula Urban Comprehensive Plan. This would provide a bikeway, safe sidewalks, and lighting for pedestrians and non-motorized travel in the project area.

Section 4(f) Evaluations

A section 4(f), Department of Transportation Act of 1966, evaluation is not required for this project as no public park, recreation area, wildlife or waterfowl refuge or any significant historic sites will be affected.

Mitigation

Each of the displaced business owners would be compensated according to the FHWA guidelines. Please refer to the Socioeconomics, Relocation Impacts discussion.

Upon completion, the right-of-way would appear clean and aesthetically pleasing. Low-water use vegetation and other landscaping would be provided around the intersection area. All materials and debris from the constructed improvements would be removed.

SOCIOECONOMICS

Affected Environment

Overview

The City of Missoula and its surrounding communities comprise a dynamic urban center with a wide diversity of economic, social, cultural and natural resources. The population of the county exceeds 82,400 (1992 estimate--Census Bureau, 1995), and although its growth rate was slower during the 1980s and early 90s compared to earlier periods, it has not escaped the growth problems of many larger conurbations. Growth, particularly in Missoula's surrounding suburbs, has led to the daily traffic jams at the Brooks/South/Russell intersection that are eloquent evidence of the city's transportation infrastructure not keeping pace with the region's requirements for access to and from its shopping, education, employment and administrative centers.

Many people will be affected by improvements to the Brooks/South/Russell intersection. Commuters will save time, energy and money through reduction in waiting times. Downtown merchants and other businesses may be able to attract more shoppers because of reduced traffic delays, which could lead to enhanced property values. On the other hand, residents adjacent to the intersection may experience increased neighborhood traffic due to rerouting of some components of the intersection's flows. Finally, in the short term there will be disruptions to traffic and pedestrian flows during construction of improvements that may inconvenience businesses and residents in the vicinity.

It is difficult to estimate changes in a region's macroeconomic magnitudes like employment, income, and industry output resulting from improvements in a street's traffic capacity. The effects are too widely diffused due to the widespread location of people and activities benefitting from the improvement. A reduction of peak hour travel time of, say, 1.5 minutes per day per vehicle multiplied by the average number of riders multiplied by the average value of time savings per rider multiplied by the average number of peak hour vehicles per day multiplied by the number of workdays in a year will yield a large aggregate saving in value of time and vehicle operating costs to society. Together with improvements in air quality, the benefits should justify the project's costs.

Neighborhood Characteristics

To assess how the neighborhoods in the vicinity of the Brooks/South/Russell intersection may be affected we first must describe them in economic and social terms. Then the project's physical and operational characteristics can be overlaid on the baseline to reveal how they will likely impact the project vicinity. Identification of the area to be studied in detail is based on descriptions of the project alternatives involving redirection of traffic on South Ave. via realignments of various streets feeding into Brooks in order to eliminate left turns and reduce traffic moving through the Brooks/South/Russell intersection. These alternatives will require displacing a number of commercial and residential structures and altering circulation patterns on such streets as (depending on the alternative) Grant, Garfield, Catlin, Washburn, Dearborn, and Fairview (on the southwestern side of the intersection), and Oxford, Regent, Stephens, Holborn, Sussex and Central (on the northeastern side).

Of interest are the impacts of 1) displacement and/or frontage changes on homes and businesses due to construction of diversions; 2) traffic diversions on homes and businesses on the above mentioned sidestreets; and, 3) related changes in traffic on South and Russell on either side of the intersection with Brooks. These potential impacts thus define the boundaries of the analysis. Two principal areas may delineated, separated by the intersection of South and Russell: an eight block quadrant on the southwestern side of the Brooks/South/Russell intersection, bisected by Brooks and bounded by South, Russell, Fairview and Grant; and a seven block quadrant on the northeastern side, also bisected by Brooks and bounded by Central, Holborn, South and Russell.

The southwestern quadrant is almost entirely commercial, with several restaurants, automotive service facilities, a shopping mall (Caras Plaza), warehouses and parking areas. A number of mixed commercial/residential parcels are located along the north side of South Ave. between Grant, Garfield and Catlin.

The northeastern quadrant, bounded by Central and Holborn, is primarily commercial. There are a few residences on Sussex Ave. between Regent and Stephens, but the rest of the quadrant is shopping facilities (dominated by Trempers Mall between Russell and Brooks), service stations, financial, real estate and insurance offices, restaurants, warehouses and parking lots. Most structures are one-story tall. KTMV-TV 23 television station, in a larger circular structure, is located between Sussex and Central Ave. and shares the block with the Missoula Manor Home, a multistory senior citizen facility.

Economic Characteristics of the Neighborhood

Based on aerial photography, there are approximately 20 dwellings in the socioeconomics study area. Assuming a typical ratio of 2.5 persons per household, there are probably about 50 permanent residents living in the study area. The average income per person in Missoula County in 1991 was $15,703 (BEA, 1993); assuming the study area residents were representative of the countywide average income, their total personal income in that year was about $785,000. Countywide, the employed workforce represented 60 percent of the resident population in 1991, which suggests that around 30 of the study area's residents were employed. The average wage for non-farm occupations in that year was $19,410.

Residences in the study area are being offered for sale in the mid-$50 thousand-low $60 thousand range for the typical two bedroom, one bath bungalow (*Home Buyer's Guide*, 1994), which indicates an aggregate market value for the 20 dwellings of approximately $1.1 million. For property tax assessment purposes, these homes would have a taxable value of approximately $42,500 (at 3.86% of market value), upon which annual property taxes would amount to about $23,500 (or approximately $1,175 per lot per year). The point of reciting these statistics is to provide a baseline description of the area's socioeconomic attributes that might be affected by changes in traffic patterns in the neighborhood.

Regarding the commercial activities that characterize the two quadrants, inspection of the aerial photography of the area reveals approximately 80 separate structures ranging in size from a few 30 square meters (100 square feet) to over 30,480 square meters (100,000 square feet). Many buildings house several businesses, so the total number of businesses probably exceeds 100. A rough guess of the total employment generated by these enterprises would be on the order of 1,100-1,200 workers, based on the countywide ratios of workers per establishment in retailing and services (13.5 and 9.5, respectively; Census Bureau, 1993).

The County Assessor's Office produced a summary of property tax information for commercial properties more or less coterminous with the socioeconomics study area (Missoula County Assessor, 1994). It listed 106 commercial properties with an aggregate market value (as of 1/1/92) of $32 million, a taxable value of $1.24 million, and projected 1993 property taxes of about $714,000. These values provide a basis for estimating individual properties' market and tax values within the study area. The average parcel size in the Assessor's list was approximately 5060 sq. m. (16,600 sq. ft.), with structures averaging about 2,164 square meters (7,100 square feet) in area. Average market value per property was $300,000 ($11,650 taxable value), and 1993 property taxes averaged about $6,735 per parcel.

Notable for the businesses along Brooks St. is the large amount of offstreet parking provided. It is not surprising that traffic congestion is so prevalent at the Brooks/South/Russell intersection, given its dual purpose of conveying through traffic to and from downtown on Business 93 and providing circulation for the local merchants' trade. Improvements to Brooks may eliminate frontage for a number of establishments and force traffic to enter and exit parking areas from side streets. This could affect the economic health of some establishments. Similarly the rerouting of non-through traffic on South Ave. to various sidestreets may impact establishments on these streets relying on sidestreet parking. Increased traffic levels may make such onstreet parking hazardous, necessitating proprietors to open up offstreet facilities.

The specific project description for the Proposed Action alternatives will provide the basis for more precise estimates of property takings, displacements and disruptions due to traffic rerouting. Consequences of the project will be examined in the next section.

Environmental Consequences

No-Action Alternative

The No-Action alternative would foster the continuation and worsening of existing conditions of congestion due to increasing population trends and traffic.

Overview of Impacts of South Avenue Realignment Alternatives: Gross Dollars and Land

The kinds of socioeconomic impacts that the alternative proposals for improving traffic through the Brooks/South/Russell intersection will generate are essentially identical, involving diverting of traffic on South desiring to turn left onto Brooks via connectors to sidestreets feeding into Brooks. Differences in effects among them depend essentially on which sidestreets are modified as connectors from South to Brooks. The project consists of implementing one of the West and one of the East alternatives. Aggregate right-of-way area that would be required ranges from approximately 0.36 hectares (0.89 acres) (West Alternate 7 plus East Alternate 5) to 1.37 hectares (3.4 acres) (West 4 plus East 3). (See Table 3-2).

Socioeconomic impacts come in a number of forms. Besides the income and expense effects sketched above there are a variety of others, including displacement of households and businesses, losses in local government revenues, and alterations in traffic circulation patterns.

Relocation Impacts

The descriptions of the various alternatives identify land parcels that would be occupied by realigned rights-of-way; several structures would have to be removed to clear the routes. The following tabulation summarizes the dislocations (see Land Use for details):

TABLE 3-2
Relocation Impacts

Alternative	No. of Parcels	ROW Take (square meters)	ROW Take (Square Feet)	No. of Structures Displaced
West Alternate 3	8	4,357	46,900	4 Commercial
West Alternate 4	10	6,257	67,355	4 Commercial
West Alternate 6	4	3,335	35,900	1 Commercial
West Alternate 7	4	1,579	17,000	2 Commercial
East Alternate 3	7	7,413	79,800	6 Commercial
East Alternate 4	6	4,909	52,840	7 (3 Commercial, quasi-public 4 Residential)
East Alternate 5	0	2,007	21,600	None

Source: Bell-Walker Engineers (file 93-BMI1.511, 04/16/96)

The Federal Highway Administration's guidelines for preparing environmental documents (FHWA, 1987) state in Section 4, *Relocation Impacts*, that relocation information should be summarized in the environmental document from "project relocation documents." These documents would be prepared after the preferred alternative has been identified, and would involve collection of both primary data (direct interviews and surveys of affected property owners) and secondary information (census and other published information on socioeconomic characteristics of the neighborhoods involved). Information to be compiled would include numbers and characteristics of residences and businesses to be displaced, assessment of relocation alternatives (quality and cost of replacement structures), consideration of special concerns (impacts of relocation on minority, elderly or handicapped persons and special institutions like rest, nursing and convalescent homes), and, in the case of businesses, identification of sites available in the area to which affected businesses may relocate and assessment of the impacts on those businesses caused by displacement or proximity to the proposed transportation facility. Specific financial and incentive programs or opportunities for residential and business relocatees need to be identified, which at a minimum must meet the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) and the Uniform Relocation Act Amendments of 1987 (P.L. 100-17).

These documents have not yet been prepared because the proposed right-of-way takes have not been finalized. That is one purpose of the Draft Environmental Assessment, namely to give potentially affected property owners the opportunity to provide the project's sponsors input on the specific impacts of the proposed action. At that time, the properties to be acquired can be appraised for their fair market values, relocation opportunities for dislocatees can be assessed, and owners of businesses adjacent to the right-of-way alignments who may lose access or parking (thus affecting the economic vitality of their properties) may present their cases for compensation.

Social Impacts

Only one alternative--East Alternate 4--would directly impact social values in the study area through dislocation of four dwellings on Sussex between Stephens and Regent. Comparable quality housing for the displaced residents would have to be provided by the project sponsors. The specific socioeconomic characteristics of these households have not been determined, pending preparation of the relocation documents. A generic description of the dwellings found in the project area was provided in the Affected Environment section of the report, however, and it gives a general idea of the types of households that would be affected by the project, i.e., one-story bungalow-type dwellings of less than 92.9 sq.m. (1,000 sq.ft.) area, with a average occupancy of 2.5 persons.

Indirectly, several tens of thousands of people per day are going to experience improvements in the quality of their lives due to the reduction of traffic congestion and air pollution at the Brooks/South/Russell intersection. The dollar value of these benefits cannot be estimated with any precision. However, the political process that generated approval of the laws and taxes underlying the project indicates that the benefits are at least equal to its costs, assuming that the alternative chosen is the most cost-effective one.

Environmental Justice

With federal or federally-funded projects, consideration of impacts on minority populations and low-income groups is required by Presidential Executive Order 12898 (11 February 1994). Examination of "environmental justice" issues is implemented by U.S. Department of Energy procedures. Any potentially unequal environmental effects or "burdens" that might result from the proposed action, the need for special information or education programs concerning the action, and opportunities to increase benefits to low-income and minority communities impacted by the project must be assessed. The project does not discriminate as to who would be directly affected and it will not create any disproportionately high and adverse human health or environmental effects on minority and low income populations.

Economic and Fiscal Impacts

Construction activities at the Brooks/South/Russell intersection area may cause some short-term reduction in local business' trade due to interruption of circulation, but this can be mitigated by the contractor to some extent through detour routing and work scheduling measures. Proper handling of these problems can be included in the terms of reference and bid specifications for the job. Displacement of businesses may reduce local employment, but this can be mitigated through relocation assistance, which may find alternative locations within the same market area. Improvements in local circulation, once the project is completed, may, because of reduced commuter congestion at the intersection, lead to increased local trade. The project can be viewed as an opportunity for local merchants to take steps to capture a larger market because of improved traffic conditions. A campaign of upgraded facilities and services could be initiated by the local merchants' association to promote development of a unifying theme among stores and businesses that would attract a broader segment of the Missoula area market. Ultimately, the Brooks/South/Russell intersection merchants could gain market share that would more than offset the direct loss of establishments to the project. And, ideally, the businesses displaced from the right-of-way would have been able to relocate to sites within the project area, thus retaining their accustomed clientele, with the result that the overall levels of trade, employment and income for the area would increase.

Displacement and removal of taxable properties by the project would eliminate some property, sales and business tax revenues to the city, county and state. The amounts of these losses have not been estimated because the affected properties have not yet been delineated or appraised. Regarding residential property taxes, based on a sample of Assessor's records for properties in the general vicinity of the Brooks/South/Russell intersection the typical residential parcel had an average market value (as of 1 January 1992) of about $54,100, which for Class 4 residential property carrying an assessment ratio of 3.86 percent yielded an assessed taxable value of about $2,090. The property tax levied in 1993 on such property averaged $1,155. Only one alternative (East Alternate 4) would displace any houses (five), in which case the city's residential property tax loss would be on the order of $5,700 (assuming no change in market value or tax rate).

Regarding commercial property taxes, on a generic basis the average commercial parcel in the project area occupied approximately 4877 sq. m. (16,000 sq. ft.) of land upon which the average structure occupied about 2164 sq. m. (7,100 sq. ft.) (Montana Department of Revenue, 1994). The recorded market value for these commercial parcels averaged about $302,000 (as of 1 January 1992), which with an assessment ratio of 3.86 percent (for Class 4 commercial property) gave an average tax value of $11,650 per parcel. Property taxes in 1993 yielded an average revenue per business parcel in the project area of approximately $6,450.

The worst case scenario in terms of loss of commercial parcel property tax revenues would be a combination of West Alternate 4 with East Alternate 3, which would displace ten commercial structures. Based on the above averages, the city's commercial property tax loss would be on the order of $64,500 per year. Additional property tax revenue losses would also result from conversion of undeveloped parcels from private to public ownership. The amount of land in the various alternatives' undeveloped right-of-way parcels ranges between 2,926 and 3,298 sq.m. (31,500 and 35,500 sq.ft.) among the four West alternatives, and between 214 and 2,531 sq.m. (2,300 and 27,240 sq.ft.) for the three East alternatives. A review of the Assessor's records for vacant properties in the study area indicates that at current market values property taxes average around $0.0215 per square meter ($0.20 per square foot), which suggests that the city's tax loss on vacant lots taken up by project right-of-way could amount to, in the worst case, around $12,750 per year.

Definitive estimates of losses of sales and employment have not been developed. A hypothetical projection could be developed by assuming that the current average market value of commercial properties represents the capital value of the business and deriving a gross value of sales on the basis of assumed rates of capital turnover and operating margins. Referring back to the section on the Affected Socioeconomic Environment, the average market value per commercial property was found to be approximately $300,000, per the Assessor's records. Assuming a conservative capital turnover rate of, say, two to three times, gross sales per commercial property would amount to $600 thousand to $900 thousand per year. Assuming further that owners marked up their merchandise or services by 100 percent of direct variable costs and derived a before-tax return on capital of 20 percent, this volume of business would support around nine to thirteen employees per establishment (depending on wage and salary rates).[1]

Depending on the combination of West and East alternatives, the number of commercial properties that might be displaced range from a minimum of one (the combination of West Alt. 6 [1 structure] and East Alt. 5 [no structures]) to a maximum of ten (West Alt. 4 [4 structures] and East Alt. 3 [6 structures]). Using the hypothetical values from the preceding paragraph, the theoretical losses of business and jobs could range from a minimum of $0.6 million in annual sales supporting approximately 9 employees to a maximum of $9 million in gross sales supporting a maximum of about 130 employees (or a mean value of $4.8 million in gross lost sales and 70 jobs). The actual values, again, have yet to be determined, based on which pair of alternatives is selected and direct appraisals of the impacted properties. These would, at any rate, be a short-term impact, assuming that viable replacement locations would be obtained for the displaced businesses.

Traffic Circulation Impacts

The proposed action will reduce interference of local traffic movements on South and Russell with through traffic on Brooks by eliminating left turns through the Brooks/South/Russell intersection. This will be accomplished at the expense of realigning segments of one or another of South's sidestreets to deliver South-to-Brooks (and vice-versa) left-turning traffic to junctions upstream and downstream of the Brooks/South/Russell intersection. The sidestreet realignments will alter circulation patterns in the vicinity of the intersection, which may affect some businesses for better or for worse, depending on whether their access or parking are enhanced or not. Please refer to maps of the alternatives (Figure 2-1) in Chapter 2 for this discussion of circulation impacts.

West Alternate 3 (W3)

W3 (Figure 2-5) consists of diverting east-bound South Ave. traffic desiring to turn left onto Brooks or Russell down to Dearborn Ave. and thence to Brooks. The link is made via a "S"-shaped connector beginning about Grant, cutting down and across Garfield and merging onto Dearborn between Garfield and Catlin. Two commercial structures and six vacant parcels would be displaced. Local circulation patterns would not likely be affected.

West Alternate 4 (W4)

This alternative (Figure 2-6) consists of diverting east-bound South Ave. traffic desiring to turn left onto Brooks or Russell down Garfield to Fairview Ave. and thence to Brooks. Curved segments in an elongated "S" would transition eastbound traffic flows from South to Garfield and then from Garfield to Fairview, which would deliver traffic to Brooks. Three commercial structures (two on

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[1] These values are probably high for the affected establishments because the Assessor's records inspected include several large properties like Trempers Mall, Caras Plaza and South Center, which bias the study area averages upward. The project alternatives would affect only smaller individual commercial parcels, so the actual impacts on business properties are more likely to be at the lower end of the hypothetical estimates.

South and one on Fairview) and eight vacant parcels would be displaced. Traffic on Catlin would be limited to northbound only in and out of its intersection with Brooks and Fairview, and westbound traffic on Fairview east of the Brooks intersection would only be allowed to turn right onto northeast-bound Brooks. This alternative would impact existing traffic patterns in the immediate neighborhood of Catlin and Fairview, but access to local businesses would probably not be impacted seriously.

West Alternate 6 (W6)

W6 (Figure 2-7) would divert eastbound traffic on South to Brooks via a "S" connector running from the SE corner of Grant and South to the intersection of Garfield and Dearborn and thence to Brooks. This alternative would displace one commercial structure at the SE corner of Grant and South plus three vacant parcels. Local circulation patterns would remain essentially unaffected.

West Alternate 7 (W7)

This alternative (Figure 2-3) consists of diverting east-bound South Ave. traffic desiring to turn left onto Brooks or Russell down Garfield to Fairview Ave. and thence to Brooks. Curved segments in an elongated "S" would transition eastbound traffic flows from South to Garfield and then from Garfield to Fairview, which would deliver traffic to Brooks. Two commercial structures on South and three vacant parcels would be displaced. Traffic on Catlin would be limited to northbound only in and out of its intersection with Brooks and Fairview, and westbound traffic on Fairview east of the Brooks intersection would only be allowed to turn right onto northeast-bound Brooks. This alternative would impact existing traffic patterns in the immediate neighborhood of Catlin and Fairview, but access to local businesses would probably not be impacted seriously.

East Alternate 3 (E3)

This alternative (Figure 2-8) would divert westbound traffic on South east of the Brooks/South/Russell intersection up to Brooks via a connector commencing between Stephens and Regent, cutting across the intersection of Sussex and Regent and teeing into Brooks just south of the latter's intersection with Central. Five commercial structures and two other vacant parcels would be displaced. Existing traffic movements through the intersection of Sussex and Regent would be interdicted, potentially affecting access to some addresses.

East Alternate 4 (E4)

This Alternative (Figure 2-9) would divert westbound traffic on South east of the Brooks/South/Russell intersection to Brooks via an elongated "S" connector commencing at Holborn, joining Sussex at its intersection with Stephens, continuing along Sussex to Brooks. This alternative would displace four residential structures (on the south side of Sussex between Stephens and Regent), three commercial structures (two on Sussex and one on Brooks), and two vacant parcels. Portions of two streets would be cut off and terminated by cul-de-sacs: Regent between Sussex and Central would be cut off at Sussex, Sussex between Brooks and Regent would be cut off at Regent, and Sussex between Stephens and Holborn would be cut off at Stephens. Access to some businesses along Sussex would be adversely affected

East Alternate 5 (E5)

This Alternative (Figure 2-2) would divert westbound traffic on South east of the Brooks/South/Russell intersection to Brooks via an elongated "S" connector commencing at Holborn, joining Sussex at its intersection with Stephens, continuing along Sussex to Brooks. This alternative would displace no residential structures, no commercial structures and four vacant parcels. Portions of two streets would be cut off and terminated by cul-de-sacs: Oxford between South Ave. and Brooks would be cut off at Brooks and Sussex between Stephens and Holborn would be cut off at Stephens. Access to some businesses along Sussex would probably not be impacted seriously.

Conclusions Regarding Circulation Impacts

Most of the project alternatives would have minor impacts on circulation and parking in the vicinity of the Brooks/South/Russell intersection, with the possible exception of E4, which would entail significant alterations in local traffic patterns and access to some addresses. Turning lanes, signalization and striping could ameliorate much of the additional burden on the side streets, however. The net effect should be to greatly reduce local congestion and improve accessibility to local businesses and institutional facilities.

Socioeconomic Conclusions

To summarize, the short-term socioeconomic impacts of the proposed action would be negative but mitigatable to insignificance through relocation assistance. The long-term impacts would be mainly positive (the more so to the extent that local merchants responded positively to the opportunity to take advantage of the elimination of traffic congestion disincentives and broaden their market attractiveness).

NOISE

Introduction

Noise has traditionally been defined as "unwanted sound," or sound which interferes with normal activities. Generally, there are two categories of noise problems: occupational noise and environmental noise. This assessment deals only with the latter. Transportation sources are the main contributors to environmental noise. These sources include cars and trucks, railroads, and aircraft. Due to the remoteness of rail lines and airports from the Brooks/South/Russell intersection, only roadway vehicle noise is addressed here.

This noise assessment is part of the overall environmental evaluation of alternative improvement schemes for the Brooks/South/Russell intersection. This section documents the results of the study, including the noise measurements carried out to characterize the current situation. Recommendations are made for appropriate mitigative measures, such as noise walls and berms which may reduce or eliminate some noise impacts.

Affected Environment

The noise analysis was based on noise measurements of the existing conditions and modeling of expected future conditions. Noise measurements were conducted at several locations in the vicinity of the project on August 25-26, 1994. Traffic counts on the major roadways, including number of heavy and medium trucks, were obtained during the noise measurement period.

A supplementary noise analysis was performed, based on modifications to the October, 1994 noise model, including the new traffic numbers projected by Bell-Walker Engineers, Inc. No new noise measurements of the existing conditions were carried out. B&A conducted noise measurements at several locations in the vicinity of the project for the original analysis, and the results are detailed in the October, 1994 report.

The future condition investigated was the year 2015. Two future alternatives were evaluated for noise impacts: No-Action and the South Ave. Realignment with various alternates.

The Federal Highway Administration's (FHWA) STAMINA/OPTIMA model was used to construct the noise model of the Brooks/South/Russell intersection, as shown in Figure 3-3.

The noise and traffic measurements allowed calibration of the model for existing conditions. The model was then used to estimate the impact from noise due to the design year traffic for the build and no-action alternatives. Impact was estimated on the basis of if the sound approaches exceeded the FHWA Noise Abatement Criteria (NAC), which are shown in Table 3-3. These criteria are used by the FHWA and Montana Department of Transportation to determine the need for noise mitigation measures due to highway improvements. The State of Montana defines "substantial increase" in noise as 10dBA or more, and "approach" as one describes less than NAC.

The noise measurements at four locations near the Brooks/South/Russell intersection are summarized in Table 3-4.

Some of these measurements (Loc 2 and Loc 4) were taken along the edges of major roads, which is where maximum noise levels can be expected.

The calibration results are shown in Table 3-5. The model is considered well-calibrated since the differences between the measured and modeled values are less than one decibel in all cases. The human ear is not capable of discerning differences in noise levels of less than one decibel, except in the most stringent laboratory conditions.

TABLE 3-3
FHWA Design Noise Level/Land Use Relationships

Land Use Category	Design Noise Level L_{eq}	Description of Land Use Category
A	57 dBA (exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or open spaces which are recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 dBA (exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, playgrounds, active sports areas, and parks.
C	72 dBA (exterior)	Developed lands, properties or activities not included in categories A and B above.
D	---	Undeveloped Lands.
E	52 dBA (interior)	Residences, motels, public meeting rooms schools, churches, libraries, hospitals, and auditoriums.

Source: Title 23, Code of Federal Regulations, Part 772

TABLE 3-4
Field Noise Sampling Results

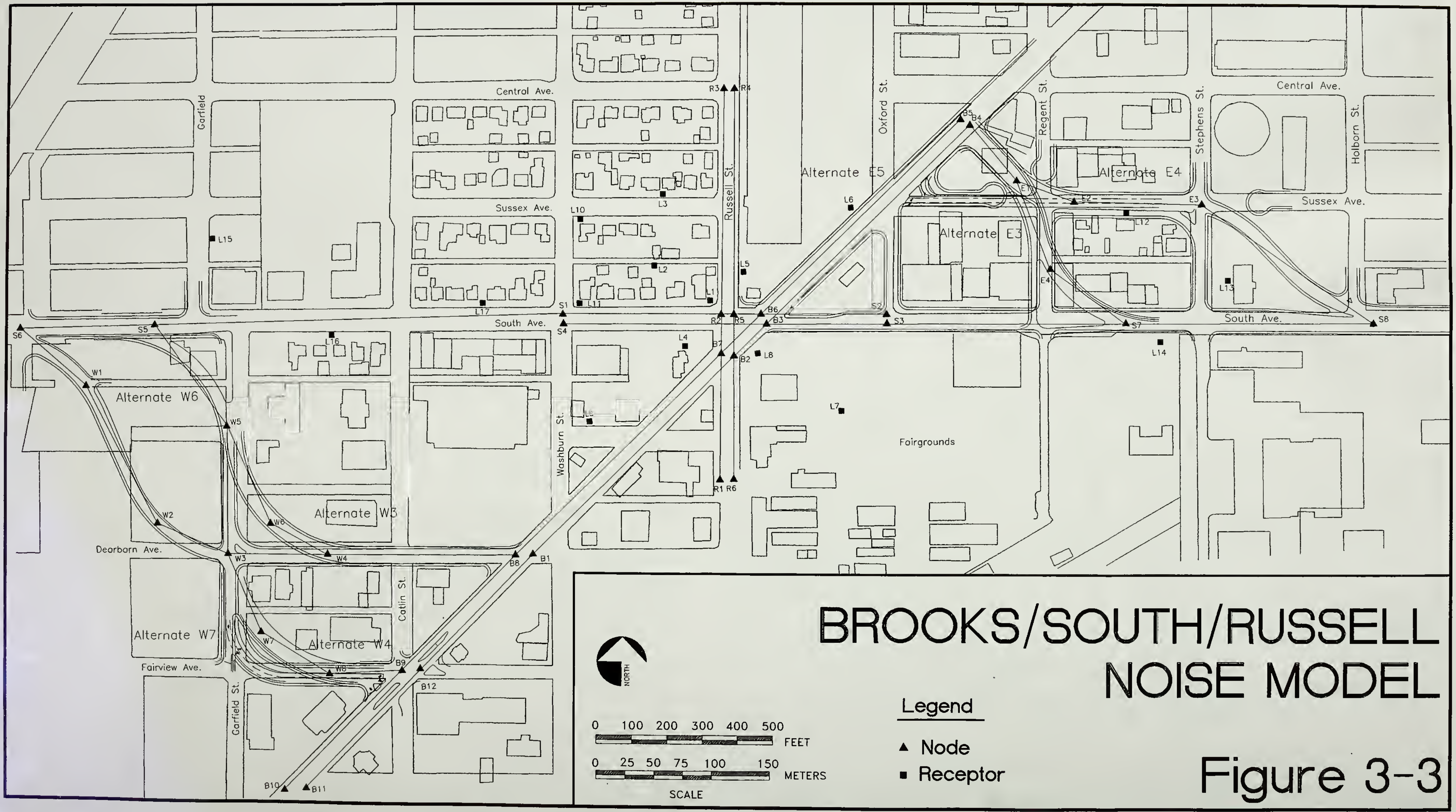
	Loc 1 Fairground	Loc 2 Tremper's	Loc 3 Sussex/ Russell	Loc 4 South/ Washburn
Time of day	13:05	13:45	14:05	14:42
L_{eq} (dBA)	66	68	53	68.2

Note: Actual duration for measurements was 10 minutes.

L_{eq} = Equivalent sound level (energy - average of noise over a one-hour period).

TABLE 3-5
Calibration of the Brooks/South/Russell Model

Location	Measured L_{eq} (dBA)	Modeled L_{eq} (dBA)	Difference
1 (Fairgrounds)	66	67	+1
2 (Tremper's)	68	67	-1
3 (Sussex)	53	53	0
4 (South Ave.)	68	68	0



BROOKS/SOUTH/RUSSELL NOISE MODEL

Figure 3-3

Environmental Consequences

The noise model indicates the following:

1. No location modeled will experience increases of over 3 dBA from the existing condition or the No Action Alternative, with the exception of the block of Sussex St. between Regent and Stephens for Alternative E4 only, which will note increases of about 10 dBA. The Montana NAC for substantial noise impact is an increase of 10 dBA from existing conditions.

2. No location modeled approaches or exceeds the FHWA NAC except for a narrow area of the Fairgrounds where there are currently no buildings or facilities within approximately 15 m. (50 ft.) of the Brooks/South/Russell intersection.

3. None of the future alternative realignments of South Ave. to the west of Brooks will cause impacts according to the NAC. On the east side of Brooks, Alternative E4 will produce increased noise levels as stated above. However, these levels will still fall below the FHWA criterion level of 67 dBA.

Mitigation

The analysis indicates that the locations in the Project area which will experience noise levels that exceed 67 dBA L_{eq} (the FHWA design criterion for residential land uses, Table 3-3) are primarily commercial or transportation land uses. These would not be candidates for sound-proofing, barriers, or other mitigation.

The increase of 10 dBA in the partially residential block of Sussex between Regent and Stephens could make this limited area a candidate for noise mitigation. From a practical perspective, it would be very difficult to provide noise shielding along the street without cutting off the residences' access to the street. Noise proofing of the two or three residences along the south side of the street would be a possibility if Alternative E4 is chosen.

Future noise levels at the northeast corner of the Fairgrounds site is expected to exceed the FHWA NAC for all alternatives, including the No Action. This assumes the entire Fairgrounds area is classified as land use "B" (normally reserved for residential and other sensitive areas). If the Fairgrounds were considered class "C" (commercial and industrial areas), then the noise levels will be well within the standards. Mitigation does not appear warranted to protect a narrow band of about 15 m. (50 ft.) of Fairgrounds land from projected noise levels.

HAZARDOUS MATERIALS

Affected Environment

The proposed roadway project will encompass property currently used as existing roadways and commercial and office space. The hazardous materials analysis for the project area included a reconnaissance of the project area, review of current and historical maps, review of a site assessment, construction with state and local agencies, and an environmental database list search. A report was prepared entitled "Limited Hazardous Material Survey Brooks/South/Russell Intersection for Montana Department of Transportation" (Dames & Moore, 1994) which describes the results of the site assessment in detail. A summary of the report is included herein.

Site Reconnaissance

During the site reconnaissance (August 2, 1994), the Brooks/South/Russell intersection and surrounding arterials one half kilometer (1/4 mile) around the intersection were observed for evidence of current and/or past presence of toxic or hazardous materials in use or storage, disposal facilities, visible soil contamination, the potential presence of above ground or underground storage tanks, electrical equipment that may possible contain PCBs, and the presence of storage containers such as drums and barrels.

In general, the area immediately around the intersection is comprised of restaurants, retail stores, gasoline stations, car washes, automobile repair and parts stores, County Fairground, and residential homes. Pole-mounted transformers were observed along the north side of South Ave. Evidence of leakage from transformers was not observed at the time of the site reconnaissance.

Consultation with Montana Power Company indicated that the pole-mounted transformers observed in site reconnaissance along Russell St. have not been tested for PCBs. According to Montana Power officials, the company does not have a comprehensive testing programs for the transformers in its system. Reportedly, transformers are tested when they are repaired or replaced and are given a blue, green or white tag if they have concentrations less than 50 parts per million (ppm) PCBs. Transformers with concentrations of PCBs greater than 50 ppm are replaced.

Visible evidence of distressed vegetation, contaminated soils, storage drums and/or barrels, current and/or past presence of toxic or hazardous materials were not observed in the immediate area of the intersection at the time of the site reconnaissances.

Historical Review

Archival USGS topographic maps (1964 and photo revised 1978) were reviewed and interpreted for the site and the site vicinity to observe surface conditions and activities. Brooks St. is depicted as a primary highway; South Ave. and Russell St. as light duty roads. Development in the vicinity of the project area shown on these maps includes the County Fairgrounds, residential and commercial properties, schools

(Missoula Vocational Technical Center, Sentinel High School, Jefferson Elementary School), and the Burlington Northern Railroad tracks.

Sanborn Map coverage was limited to one map, dated 1969, covering the area west of Russell Street between Benton Avenue on the South and Sussex Avenue on the north. The Sanborn Map was reviewed and evaluated for sites of potential environmental concern in the project area.

Interpretation of the map indicates the area is used for industrial, commercial and residential purposes. Specific sites of potential environmental concern located along the proposed alternative routes are as follows.

TABLE 3-6
Locations of Sites of Environmental Concern from Sanborn Map Review

Sanborn Map Reference	Location
Gas and Oil	NW corner, Brooks and Livingston
Gas and Oil	NE corner, Brooks and Fairview
Auto Sales & Service	SE corner, Brooks and Fairview
Gas and Oil in Yard, Auto Rep.	SW corner, Brooks and Fairview
Truck Repair	NW corner, Catlin and Dearborn

Sanborn Map references listed in the table above are all interpreted by Dames & Moore to have the potential to be associated with the use of underground storage tanks (USTs). The date of the map publication (1969) predates state UST registration requirements. Based on information obtained in a telephone conversation with Burger King personnel, the "Gas and Oil" site on the northwest corner of Brooks and Livingston is not the site referenced as Vista Site No. 1A (discussed in Environmental Database review), but are for two adjacent properties. No other readily accessible information regarding the disposition of these sites is available.

Environmental Database Review

In order to identify sites of potential environmental concern along the South Ave. Realignments, a review of lists of known or potential hazardous waste sites or landfills, and properties currently under investigation for potential environmental violations was again conducted in April, 1996. VISTA, Inc. (VISTA) of San Diego, California performed the list search and prepared a report indicating the location of sites of concern. The VISTA Report reviewed available federal, state, and local agency lists of: (a) known or potential hazardous waste sites or landfills, (b) sites currently under investigation for environmental violations, (c) sites which manufacture, generate, use, store, and/or dispose of hazardous materials or hazardous waste, (d) sites which have underground storage tanks (USTs), and (e) sites with recorded violations of regulations concerning USTs and hazardous materials/hazardous wastes.

The database list search included the following regulatory agency lists:

- U.S. Environmental Protection Agency (USEPA), Federal Superfund Sites, National Priorities List (NPL)
- USEPA, Comprehensive Environmental Response, Recovery, Compensation and Liability Act List (CERCLIS)
- USEPA, Resource Conservation and Recovery Information System (RCRIS) - Treatment, Storage and Disposal Facilities (TSDF)
- USEPA, Emergency Response Notification System (ERNS)
- RCRIS, Large Quantity Generator
- RCRIS, Small Quantity Generators
- Montana Department of Health and Environmental Sciences (MDHES), Montana Solid Waste Facility List (SWFL) Report
- MDHES Underground Storage Tank Program, Registered Underground Storage Tank Owners and Site Listings (UST)
- MDHES Underground Storage Tank Program, Leaking Underground Storage Tank List (LUST)

The VISTA report noted three sites of potential hazardous materials concerns along the proposed project alignments as in Table 3-7.

TABLE 3-7
Locations of Sites of Environmental Concern from VISTA Report

VISTA Site No.	Name/Address	Environmental Concern	Status
1A	Burger King 2405 Brooks St.	LUST[1]	Not Available[2]
2	Brooks Avenue Dairy Queen 2515 Brooks	LUST	Not Available
3A	Cenex Self-Serve - Missoula 1108 West Central	LUST	Not Available

Notes:
1. Leaking underground storage tank
2. Site status not available from information provided in VISTA Report.

Locations of the three listed sites are depicted on the Site Assessment Report Map contained in the VISTA Report as Appendix B. The status of the sites were evaluated by contacting Alan English of the Missoula County Health Department (MCHD). The following information was provided by Mr. English in a July 31, 1996 telephone conversation.

The State of Montana Department of Environmental Quality (MDEQ) initiated a soil and groundwater investigation at the Burger King at 2405 Brooks Street (VISTA Site No. 1A) to evaluate potential source areas for fuel hydrocarbons noted in a groundwater sample collected from an adjacent (downgradient) well. Laboratory analytical results from the MDEQ investigation indicated detections of diesel range hydrocarbons in both soil and groundwater samples collected from the Burger King site. Groundwater flow direction at the site appears to be toward the southwest. No engineered remedial activity has been proposed for the site. At this time final determination of the hydrocarbon source has not been evaluated, and the case remains open.

The Brooks Avenue Dairy Queen (VISTA Site No. 2) in located immediately southwest (downgradient) of the Burger King site described above. Analytical results of a groundwater sample collected from the on-site water supply well indicated the presence of fuel hydrocarbons. A subsequent investigation to evaluate the nature and extent of the hydrocarbons was performed. Laboratory analytical results from samples collected in this investigation indicated no hydrocarbon detections in soil samples, and diesel range hydrocarbon detections in groundwater samples. At this time final determination of the hydrocarbon source has not been evaluated, and the case remains open.

The Cenex Self-Serve Station (VISTA Site No. 3A) is located at the intersection of Brooks Street and West Central Avenue. A soil vapor extraction (SVE) system was constructed prior to 1990 to recover vapors from an open-bottom sub-grade vault. There is no record of specific releases this system was designed to remediate, although historic soil vapor chemical data note detection of gasoline range hydrocarbons. In the mid-1990's (date uncertain), the station operators noted a sudden loss of inventory from one of their fuel tanks. An investigation to evaluate the potential impact of the product loss to soil and groundwater was performed. Although elevated hydrocarbons were noted in the SVE system coincident with the product loss, no detectable hydrocarbons were reported from soil or groundwater samples obtained in the Cenex site investigation. This case remains open.

Environmental Consequences

In order to assess potential impacts to the roadway construction project, the following assumptions were made:

- Maximum excavation depth for roadway construction will be 0.9 meters (3 feet) below ground surface (bgs).
- Maximum excavation depth for storm sewer lines to be installed beneath the new roadways will be 2.4m (8 ft.) bgs.

- Maximum excavation depth for storage basin or lift stations could be as much as 6m (20 feet) bgs.

- Depth to groundwater in the subject area is greater than 12 meters (40 feet) bgs. (A. English, MCHD, Personal Communication).

- Potential impacts due to exposure to contaminated soil will be the only hazardous materials concern evaluated.

No-Action Alternative

With the no action alternative, no property would be acquired for additional right-of-way, and no excavation would be conducted. Selection of the No Action alternative would have no effect on existing potentially contaminated sources.

South Avenue Realignment

Three sites of potential soil contamination may occur along the proposed project alignments. The three sites fall within the area affected by any of the proposed alternatives. Project-related construction on the listed sites may encounter fuel hydrocarbon contaminated soil. Exposure of contaminated soil during construction may pose worker health and safety, and soil handling and disposal issues.

The lateral extent of contaminated soil associated with LUSTs generally is limited to the immediate vicinity of the tanks themselves. Fluids released from the tanks are anticipated to migrate vertically until encountering groundwater, which in this case is believed to be greater than 12 m. (40 ft.) bgs. Based on these observations, the potential for encountering contaminated soil at the LUST sites is low unless the proposed construction includes the areas directly over, or in the immediate vicinity of, the LUSTs.

Mitigation

Interviews with agency personnel, site owners or other knowledgeable individuals should help to confirm the nature and extent of contamination at the three listed sites. If the file search and/or interviews indicate the presence of contaminated soil at the listed sites, the primary mitigation strategy is to modify the construction plans to avoid the contaminated areas. If plan modification is not feasible, the following measures may be adopted to facilitate project construction:

- Prepare a site specific Health and Safety Plan that identifies hazardous substances that may be encountered during field operations, specifies protective equipment and clothing for on-site activities, and outlines measures to be implemented in the event of an emergency.

- Identify a qualified excavation contractor with the proper record keeping procedures, and employee training and medical surveillance for use in the event that contaminated soil is encountered.

- Contain the impacted soil either in DOT approved 55-gallon drums or stockpiled on a sheet of visqueen, and cover the stockpile with visqueen at the end of each days activity.

- Identify qualified waste haulers and landfills to remove and dispose of the contaminated soil after chemical profiling has been completed.

VISUAL RESOURCES

A visual inventory of the Project Area was conducted in August 1994 and in April 1996. Data collection included field reconnaissance, photo documentation, examination of maps, and review of previous studies.

Affected Environment

Missoula is located in the Rocky Mountain Forest Province whose surrounding landforms provide a wide variety of complex climates and vegetation (Douglas Fir and Cedar/Hemlock/Douglas Fir Sections). Rugged, glaciated mountains, and structural valleys separated by the Blackfoot and Clark Fork rivers surround the Missoula area. The Rattlesnake, Garnet, Sapphire, and Bitterroot Ranges rim the valley and relief ranges from 914 to 2,134 meters (3,000 to 7,000 feet).

The Brooks/South/Russell Intersection is located in south Missoula, in a urban setting with little or no landscaping/vegetation, topographic diversity, and outstanding natural features. The visual setting is defined by different land uses and various land use activities. The character of the study area is defined by the land use types, spatial patterns, viewing variables and visual edge conditions. Throughout the study area four distinct visual setting/sections occur.

To the northeast occurs a commercial and residential setting. The land uses and land use patterns includes residential property (single family), small local businesses, the Trempers Mall, the Main Post Office, Bob Ward & Sons Sporting Goods, and a vacant block. The existing road corridor on Brooks has curb and gutter but no sidewalks. South Ave., Stephens St., and Kent have similar curb and gutter appearances, but include sidewalks on the north side of Kent, east side of Stephens, and south side of South. Vegetation is scarce in this section, but does occur in small planters, vegetated strips and the residential area of Stephens and Sussex. Other landscaped areas include Western Federal Savings Bank, Hardees, the Missoula Post Office, the 93 Stop'n Go Drive Through, and the small picnic area at the corner of Oxford and Brooks. Features detracting from the area aesthetically include the large (asphalt) parking lot in front of Trempers Mall, the discontinuity of buildings, and the bare lot at Stephens and South. Viewing conditions and sensitivity vary throughout this section. Views on Brooks (looking northeast) and South (looking east) show extended views of Mount Sentinel and the Rattlesnake Range in the backdrop landscape setting. Views along Reserve (looking north), Stephens and Kent show enclosed viewing conditions due to buildings and narrow roadways. The buildings in the area are one story tall, built of brick or wood, painted a variety of colors, and have flat roofs. Signage is minuscule and lighting is minimal, with the exception of Trempers parking lot.

The southeast corner is the location of the Western Montana Fairgrounds. Owned by the county, this grassy open area is surrounded by a 2.1 meter (7 foot) chain link fence and includes approximately 19 hectares (47 acres). Development is comprised of fairground buildings, a race track, and open space. East of the fairgrounds is the Missoula Vocational School and Sentinel High School. The existing road corridors are mixed. On south Russell dirt lies between the roadway and fairgrounds fence where sidewalks, curbs and gutter are nonexistent. On east South Ave. twelve large deciduous trees line the road from the intersection to about a block east of the intersection. A 6.1 meter (20-foot) grassy area and old cracked sidewalk lie between the roadway and fairgrounds fence. Curb and gutter is present along South Ave. Views on South (looking east) and Reserve (looking south) are open and show backdrop views of Mount Sentinel and Mount Dean Stone. Buildings on the fairgrounds are primarily wood construction, one to two story tall, wood sided, and have shingled roofs. Periodic attractions occur, but the main activity is the week long fair every summer.

The southwest corner of the intersection has the greatest level of commercial and business development. Commercial businesses vary in size and complexity. Primary businesses include Tidymans, Five Valley's Bowling Alley, Burger King, Mailbox Etc, the First Christian Church, and Heidelhaus. Existing road corridors include Brooks, Fairview and south Reserve which are partially unified with curb, gutter, and installed sidewalks. City blocks with sidewalks include the south side of Fairview, the Five Valley's Bowling Alley block, and Tidymans block. All other roadways have only curb and gutter installed and no sidewalks. Vegetation is scarce, with a few large deciduous trees near AAA Montana, Don's Family Restaurant, and the Burger King parking area. Small flower beds, shrubs and grassy areas make up other vegetated areas. Distracting features in this section include the bare dirt parking lot behind the First Christian Church, the large parking areas of Five Valleys Bowling Alley and Tidymans, and the discontinuity of sidewalks. Building appearances are 1 to 1½ story tall, concrete or brick, and flat roofed. One exception to this is Heidelhaus with its steep shingled roof line and wood siding appearance as seen in the Alps or Switzerland. Views are mixed in this area and change between enclosed and extended. Extended views of Mount Sentinel and Mount Dean Stone are available from the parking lots of Tidymans, the bowling alley and along Fairview and Russell streets. Enclosed views are present at the corners of Brooks/Fairview, Brooks/Russell, and along South Ave.

The northwest corner is characterized primarily by residential property (single and multiple family), Jefferson Grade School, McLeod Park, and small residential businesses. The existing road corridors have unity through the use of curb, gutters, sidewalks, and landscape buffers. Vegetation softens the edge of the roads and adds interest through color and texture. Views from the Reserve (north) and South (looking west) are confined to the edge of the road resulting from dense residential development and vegetation. Residential viewing conditions on Reserve are oriented away and towards the road. Some views are blocked by vegetation and fences, others views look across Reserve at the back of Trempers Mall. Views on South include small businesses oriented towards the road.

The overall visual character of the Brooks/South/Russell Intersection Area is diverse and complicated with the respect to the varied land uses, edge conditions, and varied views. Where vegetation is used to soften the edge of the road or serve as a buffer for development, the scenic quality of the area is improved and subsequently more desirable to the viewer (e.g. residential northwest corner and trees in front of fairgrounds on southeast corner of intersection). Views from the intersection or various roadways (Brooks, South, Russell, Kent, Fairview, and Stephens) vary depending on the development occurring adjacent to the corridor and the backdropped landscape settings. Primary residential settings are oriented away from the intersection and screened by vegetation and/or physical location to nearby roads. The most sensitive viewing conditions will be from Trempers Mall, the 93 Stop'n Go Drive Through picnic area, and travelers on Brooks, South, Russell, Kent, Fairview, and Stephens. Low to moderate impacts on viewing conditions will occur from the Fairgrounds during the Fairs operation once a year. Local residents and business users are anticipated to have the highest sensitivity or concern for the visual environment while highway travelers along Business 93 (Brooks) and other local streets would be lower.

Environmental Consequences

No-Action Alternative

No adverse impacts to visual resource are predicted for the no-action alternative. Visual impacts would be dependent on the nature of any new development and whether a non-motorized travel network was completed around the intersection. Views of the Brooks/South/Russell Intersection would not change.

This alternative would likely result in increased congestion and delays in the future at the intersection, so no-action would result in increased visual impacts. These impacts would be caused from more traffic and more delays. However, the current views from the area surrounding the intersection would not change.

South Avenue Realignment

This alternative would have a net positive visual impact on the intersection and areas affected by the South Avenue Realignment. It would bring an urban uniformity to the area, which should also be positive. Landscaping would also have positive effect on the visual character of the local community.

Further, the community trail system would be connected at several additional points thereby effectively lengthened. Pedestrian movement across and through the intersection would be enhanced which would also improve the aesthetics of the intersection.

No mitigation is proposed for visual resources.

CULTURAL RESOURCES

Affected Environment

Cultural resources include properties with historical, architectural, archaeological, cultural, or scientific importance that reflect a community's heritage. Historic properties are protected by a number of federal and state laws including the National Historic Preservation Act of 1966, amended and its implementing regulations (36 CFR 800). The National Historic Preservation Act of 1966 defines historic properties as "buildings, sites, districts, structures, or objects included in, or eligible for inclusion in, the National Register of Historic Places, as well as artifacts, records, and remains related to such a district, site, building, structure, or object." Compliance with the Act requires identification of potential impacts upon historic properties, and consideration for avoiding or minimizing any adverse impacts that might be identified.

Prehistoric resources are defined as properties and associated artifacts that date from before the time of written records, which do not appear before the arrival of Spanish explorers in the sixteenth century. These resources represent Native American cultures and societies. Historic resources are defined as those properties that were occupied or used after the time when written records became available. Ordinarily, properties must be at least 50 years old in order to be listed as historic.

In compliance with federal legislation, the proposed project has been assessed to evaluate its potential impacts on cultural resources. The following discussion presents an overview of the prehistory and history of the project area, and summarizes the results of the site file reviews.

Records Search and Inventory

Assessment of the occurrence and significance of prehistoric and historic cultural resources in the Project Area included a background search of cultural resource recorded sites records on file with the State Historic Preservation Office (SHPO) Montana Historical Society in Helena, Montana. Archeological site forms were collected and reviewed from the University of Montana - Missoula Archeological Records to determine if the sites listed were located within a radius of 0.8 kilometers (½ mile) from the Brooks/South/Russell intersection.

The SHPO file search and personal communications revealed no evidence of recorded prehistoric sites within the Project Area or the surrounding locality. Because no recorded prehistoric sites were identified and the area has already been disturbed by previous actions (i.e., concrete roads), the potential for prehistoric sites in the Project Area is minimal.

The SHPO file search and official list of buildings and properties near the proposed project area. No previously recorded properties were listed. The majority of the eligible and listed Historic Sites and Historic Districts are located primarily in the early downtown of Missoula, along the Clark Fork River, in and around the University of Montana campus, and outlying areas in the Missoula Valley.

A white building located on the corner of Stephens St. and South Ave. presently owned by the school district was built prior to 1937. The building formerly was the Casa Loma Nightclub. The school district bought the building and used it as a school, it is now used for storage. Three residences on the south side of Sussex Ave. were constructed circa 1940.

Environmental Consequences

No-Action Alternative

If the proposed Brooks/South/Russell intersection project is not undertaken, the cultural resources would not be affected. Current impacts on cultural resources within the project area would continue for the indefinite future.

South Avenue Realignment

The South Avenue West Realignment alternates (W3, W4, W6 or W7) would have no effect on historic properties as there are none within any of the alternate routes. Excavation will be shallow and it is unlikely that archeological sites would be found in and adjacent to previously disturbed areas (i.e., roads or facilities).

A survey of cultural resources and recordation was conducted in August, 1996 for the South Avenue East Realignment alternates (E3, E4 or E5). Three properties, affected by Alternate E4 were determined to be historic. However, none of the three structures were deemed eligible for the National Register of Historic Places. The preferred Alternate E5 does not encroach on the three properties so there would be no effect on the properties. Excavation will also be shallow in the east alternates and it is unlikely that archeological sites would be found in and adjacent to previously disturbed areas (i.e., roads or facilities).

AIR QUALITY

Introduction

The proposed Brooks/South/Russell Intersection Transportation Improvement Project is located in the city of Missoula, Montana. Missoula has been designated as nonattainment for carbon monoxide (CO) and respirable particulate matter (PM-10) by the EPA. Tailpipe emissions are the primary source of the total CO emissions in Missoula County (MDHES, 1992). Missoula's PM-10 nonattainment status is primarily attributable to re-entrained road dust and residential wood burning, with vehicular PM-10 emissions accounting for a small portion of the total PM-10 pollutant burden (Missoula City/County Health, 1991).

The City of Missoula is employing a number of mitigation measures to reduce CO and PM-10 emissions, including use of oxygenated fuels to reduce CO emissions, and substitution of liquid de-icer in place of sanding material for roadways.

Affected Environment

Vicinity Air Quality

A complete description of ambient air quality standards and modeling methods used in this analysis are provided in a report entitled *Intersection Air Quality Modeling Analysis Technical Report for the Brooks/South/Russell Project South Avenue Realignment Alternative* (HNTB, 1996). The Air Quality Technical Report is available at the City of Missoula and has been provided to agencies with air quality permitting authority. The project study area is located within the Missoula Air Quality Control Region (AQCR 144). This region is currently classified as better than national standards for SO_2, unclassifiable/attainment for O_3, cannot be classified or is better than national standards for NO_2, and is not designated for lead. The area is designated as being in moderate nonattainment for both CO and PM-10.

According to 40 CFR Part 51, quantitative PM-10 hot-spot modeling is required for projects at sites within the area substantially affected by the project at which violations have been verified by monitoring, as well as at sites with essentially the same emissions and dispersion characteristics as those monitoring locations. However, quantitative hot-spot modeling analysis of PM-10 emissions is not required until modeling guidance for such analyses is released. PM-10 hot-spot modeling guidance will not be published by the EPA until at least late summer of 1997.

According to the Federal Highway Administration (FHWA), PM-10 conformity determinations are to be done on a regional scale by the local Metropolitan Planning Organization (MPO). The MPO for the project area is the Missoula Office of Community Development. Robert Peccia and Associates in Helena, Montana prepared the regional PM-10 emissions analysis for Missoula. The analysis was completed by January of 1997. The MPO made a conformity determination for PM-10 in Missoula that indicated all projects were in conformance.

Carbon monoxide, a colorless and odorless gas which is the product of incomplete combustion, is the major pollutant from gasoline fueled motor vehicles. CO emissions are greatest from vehicles operating at low speeds and prior to complete engine warm-up (within approximately eight minutes of starting). Congested urban roads, therefore, tend to be the principal problem areas for CO. The averaging times associated with the CO standards are relatively short (1 and 8 hours), thus CO concentrations can be modeled using simplified "worst-case" meteorological assumptions. Modeling is also simplified considerably by the stable, non-reactive nature of CO.

Based on the above discussion, the air quality impact analysis for this project will be limited to a microscale analysis of ambient CO concentrations. The criteria for adverse impact shall be: 1) an increase in CO concentrations at the Brooks/South/Russell intersection with the proposed alternative, as compared to the No-Action or 2) an exceedance of the National or Montana AAQS for CO with the proposed Build alternative, at either of the other two modeled intersections.

Modeling Methods

The air quality analysis focused on the Brooks/South/Russell intersection in Missoula. The Brooks Street/Fairview intersection, and the proposed intersection of Brooks St. with the South Avenue East Realignment (East South) intersections were also modeled, to illustrate the effect of the proposed intersection improvements. Air quality modeling was performed in accordance with the EPA *Guidelines for Modeling Carbon Monoxide from Roadway Intersections* (EPA CO Modeling Guidelines). The Brooks/South/Russell, Brooks/Fairview, and proposed Brooks/East South intersection locations are shown in Figure 3-4.

Modeling receptors were located in accordance with the EPA CO Modeling Guidelines, approximately 3 m. (10 ft.) from the edge of the pavement on both sides of the roadway, beginning at the vehicle stop line of each leg of the intersection (vehicle queue).

Air quality modeling assumptions and procedures were reviewed by local, state, and federal air quality agencies. A summary of correspondence with air quality agency personnel is listed in the consultation summary.

Two EPA-approved computer models, MOBILE5a and CAL3QHC 2.0 (CAL3QHC), were used to analyze the emission and dispersion of CO in the vicinity of the intersections. MOBILE5a calculates CO emission rates using several variables, including vehicle travel speed, year of analysis, and temperature (EPA, 1994). CAL3QHC predicts non-reactive pollutant concentrations, including CO, in the vicinity of signalized intersections. Variables used in CAL3QHC include intersection geometry and signalization, traffic volumes, emission rates from MOBILE5a, and meteorological data (EPA CAL3QHC Modeling Methodology, 1992).

Specific variables used in MOBILE5a include:

- Analysis years: 1993 (Existing), 1998 (Project Build Year), 2015 (Design Year)

- Average vehicle speeds: 32 and 40 kph (20 and 25 mph), 8 kph (5 mph) less than posted speed)

- Vehicle mix and registration distribution: Urban vehicle mix and registration distribution as used in the 1990 Missoula County Carbon Monoxide Emission Inventory (Missoula CO Inventory).

- Ambient temperature: Minimum -2.8°C (27° F), Maximum 5.6°C (42° F), Average Ambient 1.4°C (34.6° F). Calculated in accordance with the EPA CO Modeling Guidelines.

- Fuels: Oxygenated fuels, with no alcohol blend RVP waiver. Ether blend market share/oxygen content: 80% / 2.7%. Alcohol blend market share/oxygen content: 20% / 3.5%. Data obtained from the Missoula CO Inventory.

Copies of the MOBILE5a and CAL3QHC data files and output are presented in the Air Quality Technical Report, Appendices B and C (HNTB, May 1996).

CAL3QHC predicts non-reactive pollutant concentrations, including CO, in the vicinity of signalized intersections. Variables used in CAL3QHC include intersection geometry and signalization, traffic volumes, emission rates from MOBILE5a, and meteorological data. specific variables used in CAL3QHC include:

- Existing (1993) and projected traffic volumes for 1998 (Build year) and 2015 (Design year)

- Meteorological conditions:
  Wind speed: 1 m/s (3.3ft/s), worst case
  Wind direction: Worst case for each receptor location, calculated every 10 degrees
  Atmospheric stability class: Urban - Pasquill Class "D"

- Surface roughness: 108 cm

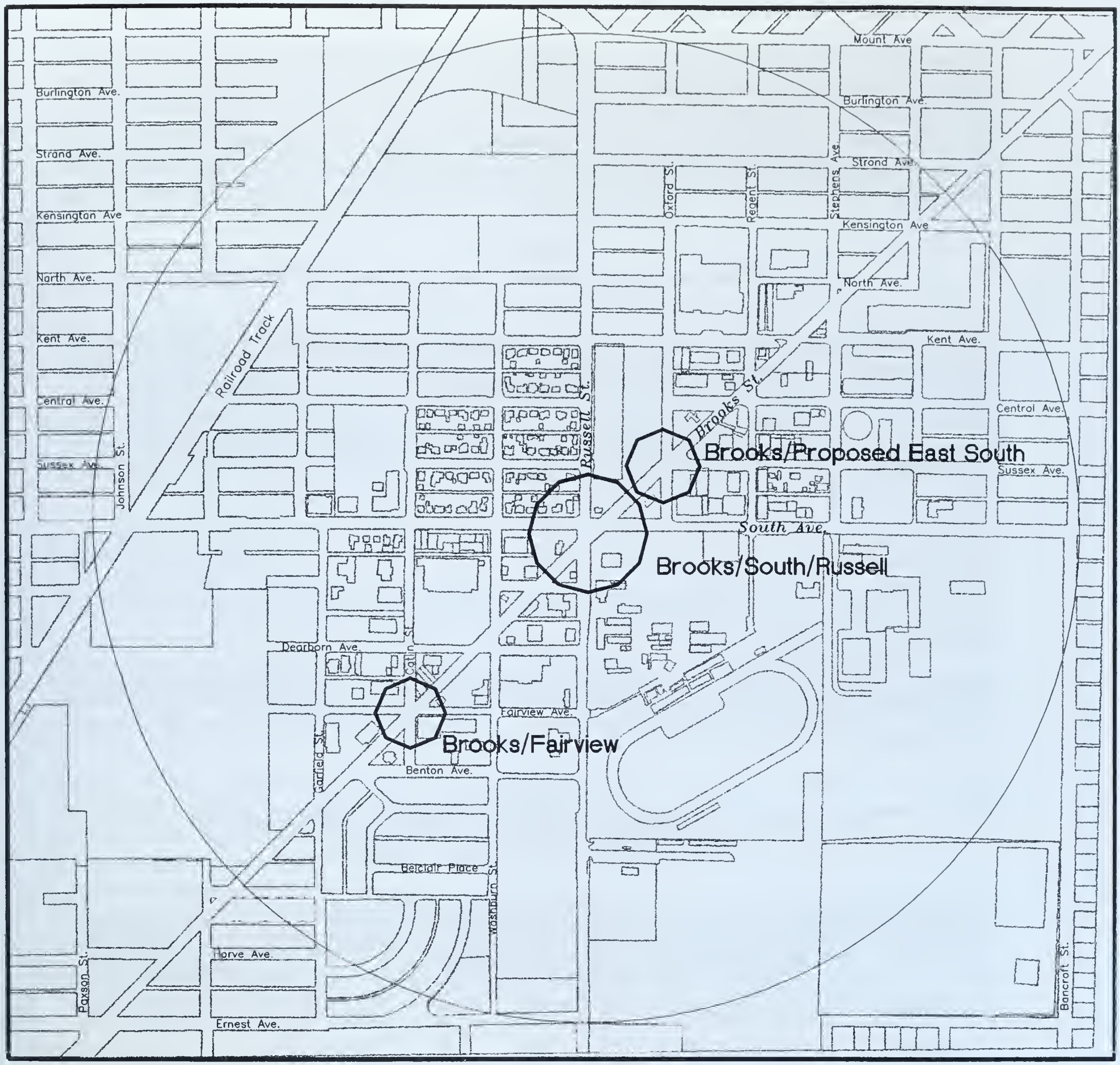
- Mixing height: 1,000 m

- Peak hour background CO concentrations: 2.7 ppm (1993), 2.2 ppm (1998), 1.9 ppm (2015); projected from 1990 background CO concentration obtained from the Montana Department of Health and Environmental Sciences (MDHES), and performed in accordance with the EPA CO modeling guidelines, using projected traffic volumes and MOBILE5a projected emission factors.

- CO emission factors from MOBILE5a

Environmental Consequences

The results of the air quality analysis are presented in Tables 3-8 and 3-9, and present the peak 1 and 8 hour maximum CO concentrations at each intersection for each alternative. These values represent the highest concentrations of CO that could reasonably be expected to occur at each intersection during simultaneous occurrence of worst-case traffic and meteorological conditions. The value in parentheses represents the specific receptor location at the intersections (HNTB, May 1996).



AIR QUALITY MODELING SITES

Legend:

⬡ Sample Location

Figure 3-4

The existing (1993) CO concentrations are greater than the modeled CO levels for the No-Action alternative in 1998 and 2015, despite projected increases in traffic volume. Federal standards and regulations to be implemented in the future will result in lower exhaust emissions. Emissions will be further decreased as the number of older, more-polluting vehicles on the road are reduced. The MOBILE5a program considers both the Federal actions and the "phasing-out" of older vehicles. As a result, future year emission rates modeled using the MOBILE5a program are lower than earlier years.

TABLE 3-8
Peak One Hour Maximum Carbon Monoxide Concentrations, ppm (Maximum Concentration Receptor)

	STUDY INTERSECTION								
	Brooks/South/Russell			Brooks/Fairview			Brooks/East South		
Alternative	1993	1998	2015	1993	1998	2015	1993	1998	2015
Existing/ No-Action	30.2 (48)[1]	22.3 (48)	15.4 (18)	13.7 (34)	9.9 (24)	7.8 (24)	7.6 (11)	6.0 (11)	5.1 (18)
South Avenue Realignment	-n.a.-	11.9 (29)[1]	9.4 (9)	-n.a.-	12.2 (26)	8.5 (27)	-n.a.-	10.6 (26)	8.3 (27)

[1] Receptor location for collection of data.

The National Ambient Air Quality Standard for Carbon monoxide, one-hour average, is 35.0 ppm, not to be exceeded more than once per year. The Montana Standard is 23.0 ppm, one-hour average, not to be exceeded more than once per year. Peak hour background CO concentrations used were as follows: 2.7 ppm (1993), 2.2 ppm (1998) and 1.9 ppm (2015).
Source: HNTB, May 1996.

TABLE 3-9
Peak Eight Hour Maximum Carbon Monoxide Concentrations, ppm (Maximum Concentration Receptor)

	STUDY INTERSECTION								
	Brooks/South/Russell			Brooks/Fairview			Brooks/East South		
Alternative	1993	1998	2015	1993	1998	2015	1993	1998	2015
Existing/ No-Action	21.1 (48)[1]	15.6 (48)	10.8 (18)	9.6 (34)	6.9 (24)	5.5 (24)	5.3 (11)	4.2 (11)	3.6 (18)
South Avenue Realignment	-n.a.-	8.3 (29)[1]	6.6 (9)	-n.a.-	8.5 (26)	6.0 (27)	-n.a.-	7.4 (26)	5.8 (27)

[1] Receptor location for collection of data.

The National and Montana Ambient Air Quality Standard for Carbon monoxide 9.0 ppm, not to be exceeded more than once per year. A persistence factor of 0.70 was applied to one hour concentrations to obtain eight-hour values.
Source: HNTB, May 1996.

The air quality modeling for the existing conditions indicate no potential exceedances of the 1-hour NAAQS for CO at the three intersections modeled. A potential for exceedance of the Montana 1-hour standard in 1993 is indicated at several receptor locations at the Brooks/South/Russell intersection. Potential exceedances of the National and Montana 8-hour standards are shown at nearly all of the receptor locations at the Brooks/South/Russell intersection, including the CO monitor currently in place, and at one receptor location along the Brooks/Fairview intersection.

No-Action Alternative

The results indicate no exceedances of either the National or Montana 1-hour CO standard at any of the intersections studied under the future No-Action alternative. However, potential exceedances of the 8-hour standard are indicated at the Brooks/South/Russell intersection in both the 1998 and 2015 model years, with a maximum worst-case concentration of 15.6 ppm in 1998, and 10.8 in 2015. The modeling indicates no potential for exceedance in 1998 or 2015 of either the 1-hour or 8-hour standards at the Brooks/Fairview or Brooks/East South intersections.

South Avenue Realignment

The South Avenue Realignment alternative would have a beneficial effect on air quality in the vicinity of the Brooks/South/Russell intersection. Compared to the No-Action alternative, the maximum concentration at the intersection would decrease by 47% in 1998, and 40% in 2015. The CO monitor currently at the intersection would experience a 33% reduction in worst-case CO levels with the proposed alignment in 1998, and 29% in 2015.

Carbon monoxide concentrations at the other modeled intersections would increase with the South Avenue Realignment, as compared to the No-Action alternative. This is due to the increase in traffic through these two intersections, resulting from the redirection of South Avenue traffic that would otherwise use the Brooks/South/Russell intersection.

The results from the modeling of the South Avenue Realignment alternative indicate no potential for exceedance in 1998 or 2015, of either the National or Montana 1 or 8-hour CO AAQS at any of the three modeled intersections.

Conclusions

Implementation of the South Avenue Realignment alternative, compared with the No-Action alternative, would result in decreased congestion and a reduction in CO levels at the Brooks/South/Russell intersection. Worst-case levels of CO at other modeled intersections would increase with the proposed South Avenue Realignment alternative, but would remain below the National and Montana Ambient Air Quality Standards. Based upon the preceding analysis, the Brooks/South/Russell Intersection Project would have a beneficial effect on local CO air quality.

BIOLOGICAL RESOURCES

This section describes the affected environment and environmental consequences related to vegetation, wildlife, special-status species and wetlands. Inventory data and impact analyses were determined from written consultation and personal communication with the U.S. Fish and Wildlife Service (FWS); Montana Department of Fish, Wildlife and Parks; the Montana Natural Heritage Program; Missoula City Planning Department; Missoula City Parks and Recreation; aerial photographs; and field surveys and ground photographs taken in August 1994.

Affected Environment

Vegetation

Vegetation within the Brooks/South/Russell project area is characteristic of urban areas in Western Montana. There are no native vegetation communities within the project area. Grasses, shrubs and trees in the area are primarily introduced species associated with roadsides and landscaped lawns. Gardens in the area are predominately used for the cultivation of vegetables, fruits and flowers. The county fairgrounds are seeded with species of rye and clover. There are several 38-46 centimeter (15-18 inch) diameter Siberian Elms (*Ulmus pumila*) located on the corner of Brooks St. along the fairgrounds and down along Russell. The trees have not been inventoried, but are believed to be approximately 100 years old (Rogers, 1993). This species is not considered a desired urban street tree due to its susceptibility to disease and insect infestation. No listed or proposed threatened or endangered species of plants exist within the project area (Craig, 1993).

Wildlife

Wildlife within the project area is typical of urbanized areas throughout Western Montana. Large mammal habitat is restricted due to the predominance of buildings and paved lots and streets, as such, the area supports a low diversity of species. Christmas bird counts within the City of Missoula recorded 66 species (Heron, 1993), however, characteristic species within the study area include the Black-billed Magpie (*Pica pica*), American Robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), Rock Dove (*Columba livia*), and House Finch (*Carpodacus Mexicanus*). The project area does not include any fish habitat.

The Montana Department of Fish, Wildlife and Parks reports that the project "will have no impacts to the fish and wildlife resource or their habitats. This urban area is highly developed and there are no fisheries or wildlife habitats to impact." (Firebaugh, 1996)

Special-Status Species

In November 1993, written consultations with the Helena office of the FWS indicated that the federally-listed endangered Peregrine Falcon (*Falco peregrinus*) may occur in the project area (McMaster, 1993).

Biologists in the FWS Endangered Species Suboffice in Kalispell were contacted by mail to determine the location of any Peregrine Falcons in the study area. The nearest reintroduction of Peregrine Falcons had occurred one hour north of Missoula on the Flathead Indian Reservation (Shelley, 1993). The FWS concluded that "based upon the nature of the proposed work and the locations of the project, we do not expect any project related impacts to threatened or endangered species." (McMaster, 1993)

Wetlands

There have been no federal wetland inventories completed for the project area by the Soil Conservation Service (Blaine, 1993) or through the National Wetlands Inventory Program of the U.S. Fish and Wildlife Service (Pearson, 1993). Field investigations and consultation with local resource authorities determined that no wetlands occur within the project area (Reel, 1993).

Environmental Consequences

No-Action Alternative

The No-action alternative would have no impact on biological resources in the project area.

South Avenue Realignment

The South Avenue Realignment alternatives would have no impact on biological resources in the project area. No listed or proposed threatened or endangered species of plants or wildlife exist within the project area (MDFWP, 1996).

EARTH RESOURCES

Affected Environment

The affected environment section includes information on the general geology and soils of the site area in order to characterize the site area and identify potential adverse impacts that may be caused by project alternatives. Information on the site area was obtained from existing literature as well as discussions with federal and state agency resource specialists.

Geology

The project area is located in the Missoula Basin of the Northern Rocky Mountains physiographic province. The Missoula Basin is a wedge-shaped depression, trending northwest to southeast, ranging from about 8 kilometers (5 miles) to 24 kilometers (15 miles) across and approximately 80.4 kilometers

(50 miles) long. The city of Missoula is located at the eastern edge of the basin. The Missoula Basin consists of the Missoula and Ninemile Valleys and is bounded by deeply dissected mountains with elevations generally around 1,981 meters (6,500 feet). Valley floor elevations in Missoula are about 975 meters (3,200 feet).

The Missoula Basin is a closed structural depression downdropped to the northeast along the northwest-southeast trending Clark Fork Fault, overthrust from the southwest along the Ninemile Fault and Albert Creek Thrust Fault. Deposits of interbedded shale and conglomerate, eroded from the marginal highlands, mantled by channel gravels and sands are found in the Missoula Basin. The basin was flooded and drained by successive glaciations during the Pleistocene. More than 61 meters (200 feet) of unconsolidated glaciolacustrine (Glacial Lake Missoula) cobbles, gravel, sand, and clay was deposited. The present drainage system is eroded into these deposits. The geology of the project area has been mapped as older alluvium, a thin mantle of reworked Lake Missoula silt and poorly sorted, unconsolidated sand and gravel on low terraces marginal to the flood plains of the Clark Fork, the Bitterroot River and their tributaries (McMurtrey and others 1965). Deposits from Glacial Lake Missoula shorelines are evident on Mt. Jumbo and Mt. Sentinel to the east and northeast of the project area (Alt and Hyndman 1986).

Paleontology

Fossils are quite limited in the region due primarily to rock type and age. However, some of the Pliocene gravels may contain bones and teeth of mammals such as mice, horses, and camels (Alt and Hyndman 1986).

Soils

The soils in the project area have only been mapped in a general soil survey (SCS 1978, 1982) so detailed information is limited. It is assumed that an intensive geotechnical study of the site area will be completed prior to final design and construction.

Due to the extensive development in the area, the soils have been extremely reworked. Prior to construction and development, the soil profile was probably 30 to 60 centimeters (1 to 2 feet) of sandy silt overlying sandy gravel, cobbles, some clay, and boulders, typical of glacial lakebed material (Crawford 1993). The Soil Conservation Service (Blaine 1993) has classified the soils in this area as "orthents" since the original soil horizons have been destroyed or buried. Since the soils have been reworked, no erosion potential has been designated for the soils in the area. However, these soils may be subject to erosion on slopes as well as slope instability.

Environmental Consequences

No-Action Alternative

With the no-action alternative there would be no impact to earth resources. On-going soil erosion in the area, which appears to be relatively minor, would continue. Also, much of the project area is under pavement or buildings and the Missoula County Fairgrounds offer the only expanse of exposed ground in the project area.

South Avenue Realignment

With the South Avenue Realignment alternatives, soils would be disturbed during construction. These areas will be graded and surfaced as new by roadway and the remaining exposed areas will be revegetated as soon as possible so as to reduce soil erosion and the possibility of slope failure. With adherence to mitigation, minor impacts will be short-term and generally limited to the construction phase of the project.

There are no impacts to geology except surface disturbance as discussed previously. Potential impacts to paleontological resources are mitigated. Should paleontological resources be found during construction, construction supervisory personnel will follow project contract procedures regarding paleontological resources.

Mitigation

Areas disturbed by construction will be contoured and revegetated as soon as possible according to the MDT and FHWA procedures for roadway slope stability so as to reduce the possibility of soil erosion or slope instability.

Prior to construction, all supervisory construction personnel will be instructed on the protection of paleontological resources in regards to state of Montana and federal laws. To assist in this effort, the construction contract will address an acceptable procedure to protect and remove the paleontological resource(s) in the event such features are discovered.

SURFACE AND GROUND WATER RESOURCES

Affected Environment

Surface Water

The Clark Fork of the Columbia and the Bitterroot River are the nearest large perennial water courses to the project area. Neither river is located within 2 kilometers (1.5 miles) from the project area. Pattee

Creek is a small stream entering the Missoula Valley floor approximately 2 kilometers (one mile) southeast of the project area. Flow from Pattee Creek is captured at the canyon mouth and conveyed by an open ditch along the southern margin of the valley to a recharge basin located approximately 1 kilometer (0.8 miles) southeast of the project area. The recharge basin is at a higher elevation than the project.

A detailed evaluation of the flood hazard areas for the city of Missoula has completed by the Federal Emergency Management Agency (FEMA). The fairgrounds have been identified by FEMA to be classified as being effected by a 500 year flood or in the 100 year flood with average depths of less than 30 centimeters (1 foot) or with drainage areas less than 2.6 square kilometers (1 square mile), or an area protected by levees from a 100 year flood (FEMA, 1988). The Stephens Ave. segment near Pattee Creek Drive has been identified by FEMA to be located in a special flood hazard area inundated by a 100 year flood. Flooding in this area could reach an average depth of 30-90 centimeters (1-3 feet), usually sheet flow on sloping terrain (FEMA, 1988). The Stephens Ave. area is located approximately 1 kilometer (0.6 miles) from the Brooks/South/Russell intersection.

A majority of the stormwater runoff in Missoula drains into the 2669 dry wells (Woessner, Wogsland 1988) located throughout the municipal Missoula area. The stormwater is injected into highly permeable soils and is filtered into the Missoula Aquifer. There are some stormwater drainages discharging directly into the rivers, however, runoff in the project area drains to drywells.

Groundwater

The Missoula Valley Aquifer, a designated sole source aquifer, is located in water-bearing formations below the City of Missoula. The aquifer is the principal source of drinking water for the City of Missoula and supplies 80% of the residents in Missoula County with drinking water. The aquifer also supplies water to over 30 small community water systems serving residential developments throughout the valley. The surrounding recharge area stretches from the eastern end to Huson to approximately 32 kilometers (20 miles) to the northwest. No alternative sources of viable drinking water exists. If this aquifer is contaminated, a significant hazard to public health could occur.

The wide alluvial valley that contains the Missoula Aquifer is typical of mountain valleys in the Rocky Mountain Region. The recent alluvium that fills the valley is underlain by layers of permeable sedimentary deposits and Precambrian Metamorphic bedrock. Surficial deposits are generally coarse grained, although lacustrine silts are present in some areas. Groundwater depths are typically shallow. In the Missoula Aquifer depth to groundwater ranges from 0 meters (0 feet) in some swales to depths greater than 30 meters (100 feet) in some Glacial Lake Missoula Clay deposits (MCCHD 1987). Soils over the aquifer are generally sandy to gravelly loams. The vadose zone consists of clean to silty sand and gravel.

The Missoula Aquifer, with thin, coarse soils and shallow groundwater, is very vulnerable to contamination. The relative vulnerability of an aquifer to contamination is dependent on several factors. The most important of these factors include: the depth to groundwater, the nature of the geological material of the surface, vadose and saturated zones, the hydraulic conductivity and rate of recharge, and to a lesser extent the topography and climate (MCCHD 1987).

Recharge/Discharge

Groundwater flows away from the Clark Fork River in the Missoula area and towards the River west of the Confluence of the Bitterroot and Clark Fork Rivers. The water table typically is at its highest elevation in June and July and at its lowest in February and March (City-County Health Department, 1987). Average groundwater velocities in the Missoula area have been estimated at 1.8 meters (6 feet) per day (City-County Health Department, 1987).

Water recharge by direct precipitation on the unconfined aquifer has not been quantified, however, it is believed that if recharge occurs as a result of direct precipitation, it is in the spring associated with snow melt and spring rainfall. Once July begins, probably all water not entering the storm systems is evapotranspired. By November, the ground becomes frozen, not thawing until about March.

Recharge occurs by lateral inflow from adjacent valley sediments which outcrop at topographically higher elevations. This occurs in spring when the precipitation and the melting of winter snow pack comprise the principal recharge to the Bedrock and Tertiary hydrostratigraphic units. At the valley margins, groundwater is transmitted into the Missoula Aquifer by the adjacent upland sediments. Recharge also occurs from influent streams. The Clark Fork River, Grant Creek, and smaller streams such as Pattee Creek, Butler Creek, O'Keefe Creek, Mill Creek and La Valle Creek all lose water to the aquifer over a 4.8 kilometer (3 mile) reach as the river enters the valley. Recharge from storm water runoff in the Missoula area is channeled into 2,669 dry wells which allow water to percolate to the water table. Lateral inflow from adjacent sediments and other sources accounts for the remainder of the total recharge.

Discharge from the aquifer occurs by the following mechanisms: evapotranspiration, base flow to streams and pumping wells. Several streams enter the Missoula Valley and have an influent section that contributes recharge to the aquifer. Pollutants entering the stream above the influent section can reach the aquifer with recharge water.

Ground Water Quality

The Missoula Aquifer is vulnerable to contamination. Urban storm runoff is a potential source of contamination. According to a study done by the University of Montana, (Woessner, Wogsland 1988) there are 2669 dry wells in the municipal area that meet the EPA Class 5 description of an injection well. It is estimated that annually, 4.5 million liters (119 million gallons) of contaminant-laden storm water are injected 2.4 to 6.1 meters (8 to 20 feet) deep into highly permeable soils via these sumps (MCCHD 1987). Although the contribution to groundwater recharge is relatively small compared to other sources, the potential for contamination is disproportionately higher (MCCHD 1987). Runoff quality is variable, with annual total dissolved solids levels estimated at more than 3,991 metric tons (4,400 tons).

US EPA Design Plan Review

If federal monies are to be expended on construction projects over designated sole source aquifers, the US EPA is required to review design documents and provide comment to ensure protection of the groundwater resource. Mr. William Monheiser of the US EPA Region VIII, Groundwater Unit, Pollution Prevention Group will provide oversight for this aspect of the project. After the preferred alternative is selected and nearly complete design drawings are prepared by the project engineer, Mr. Monheiser will review the plans with regard to sole source aquifer protection issues, and provide comment to the engineers for incorporation in the final design plans.

Environmental Consequences

No-Action Alternative

Under the no-action alternative, existing drainage, aquifer, and flooding conditions associated with existing the Brooks/South/Russell intersection, as described in the existing environment, will not be altered or improved.

South Avenue Realignment

There are two types of water quality effects that are common to all roadway improvements that may potentially occur in the project area with the construction of this alternative:

- storm runoff or the introduction of foreign substances into the groundwater or water courses
- erosion and sedimentation.

Storm Runoff

An area that endures heavy automobile traffic can be expected to experience long-term effects on the quality of the drainage ways along the roadways. Nonpoint source pollutants, such as heavy metals and hydrocarbons, will be transported by the runoff from rainfall and may affect quality of the drainageways. Pollutants will always increase with increased traffic, but the traffic levels are predicted to increase whether or not the proposed project is constructed.

The greatest potential for contamination by point source pollutants is during the construction process. The possibility exists for adverse quality impacts if stockpiled materials or loose soils on cut or fill slopes not yet revegetated or landscaped are eroded by storm runoff during this period. Applicable permits will be filed prior to construction which may include the Construction Dewatering General Discharge Permit authorized under the Montana Pollutant Discharge Elimination System (MPDES) if the construction activity in which clearing, grading, and excavating would result in greater that two hectares (five acres) total or if the disturbance of greater than 0.4 hectares (1 acre) is located within 30.5 meters (100 feet) of a surface water body. Other permits may be necessary including the General Permit to Discharge Treated Waste Water from Ground Water Remediation or Dewatering Operations, if construction dewatering activities that discharge waste water to ground water and would likely cause pollutants to enter ground water.

Erosion and Sedimentation

The most likely opportunity for erosion and/or sedimentation to occur in the project area is during the construction process and revegetation period. Potential sources of erodible material created during the construction process would include loose fill adjacent to drainage features, disturbed earth from roadway leveling, and excavated and backfilled soil around roadway and drainage structures. However, because slopes are very mild, and because the mitigation measures and Best Management Practices will be used (see Mitigation), the probability of major erosion and/or sedimentation to occur would be very low.

Mitigation

Best Management Practices and mitigation strategies in consultation with the EPA and the City/County Environmental Health Department will be implemented to complete the proposed action alternatives. The mitigation measures and management practices include, if appropriate, but are not limited to:

- Protecting against erosion at drainage outlets with check dams and outlet protection
- Trapping sediment before it leaves the site using catch basin inlets, temporary stockpiles, and sediment basins

Other Best Management Practices that will be used, if appropriate, include:

- erosion control matting
- temporary diversion dikes
- rock outlet protection
- straw bale barriers
- storm drain inlet protection
- solid waste management
- stabilized construction entrances
- protected chemical and material storage areas
- scheduling clearing and grading when erosion potential is minimum
- limited disturbance areas
- minimal removal of natural vegetation
- prompt reclamation and revegetation

CONSTRUCTION RELATED IMPACTS

Short-term, temporary adverse effects related to construction activities have the potential to affect soils; air quality; noise; public safety; population and employment; traffic flow, circulation, and access to businesses; and consequent fiscal impacts due to business disruption. Construction activities will be managed according to the City and County Public Works Department and the Montana Department of Transportation's guidelines for safety and traffic control during construction. Construction of the project will also result in a small beneficial effect on the region's economy.

Soils

With the South Avenue Realignment alternative, soils would be disturbed during construction. These areas will be graded and surfaced as new by roadway and the remaining exposed areas will be revegetated as soon as possible so as to reduce soil erosion and the possibility of slope failure. With adherence to mitigation, minor impacts will be short-term and generally limited to the construction phase of the project.

Air Quality

The widening of the existing rights-of-way and construction of new routes from South Ave. to Brooks St. will increase PM-10 from re-entrained road dust, increased traffic flow through road detours, and slash burning from right-of-way clearing. According to the Montana Department of Environmental Quality, Air Quality Division, certain practices should be followed during the construction phase of the project to keep PM-10 emissions to a minimum.

In order to minimize PM-10 emissions during the construction phase of the project, the following actions are recommended:

1) Sweeping streets on both ends of the project each day to reduce the major carry-on of dirt from the project onto the paved streets within the non-attainment boundaries.

2) Water and/or chemically stabilize (i.e., so that the emissions are less than 5% opacity) any unpaved detour routes.

3) Any slash being burned due to right-of-way clearing should be stacked with a brush blade and cured. Open burning restrictions and any permit or fee must be paid in advance.

4) Asphalt plants and gravel crushers are a source of PM-10. If these facilities in the immediate vicinity, the use of these would require an air quality permit from the State of Montana Department of Health.

Noise

Construction equipment used to prepare the new roadways and to widen existing roadways will generate noise during construction. In addition, detour routes used to maintain traffic flow during construction could increase traffic on sides streets that do not receive high traffic volume at the current time. Construction equipment typically generates noise that exceeds noise criteria for residential areas; however, the sounds are short duration and would be generated only during daylight hours as specified by the construction guidelines within City of Missoula. Construction contracts will include a clause requiring construction equipment to meet maximum noise emission standards set by the City of Missoula and/or the State of Montana.

Public Safety

Three sites of potential soil contamination (see Appendix B) may occur along the proposed project alignments. Ground excavation during construction on or near the listed sites may encounter fuel hydrocarbon contaminated soil. Exposure of contaminated soil during construction may pose worker health and safety, and soil handling and disposal issues.

Population and Employment

Most of the workers and basic construction materials and equipment will be available from local sources, which means that there will be little need to import labor and materials from outside the region. With little relocation of workers or expansion of local businesses to accommodate the project likely to occur, the area should not experience any noticeable fluctuations in population or demand for housing and services because of the project.

Construction Traffic Control

During the construction period, traffic would have to be routed within the existing street network and diverted as appropriate using alternative routes. Construction period traffic control would be accomplished according to MDT's *Traffic Control Manual for Highway Construction and Maintenance* (FHWA, 1993).

A construction traffic control plan would be developed as part of the construction plans. It is expected that one lane of traffic can be maintained in each direction throughout the construction. To the extent practical, the traffic lanes would be on the existing roadway or temporary pavings. The Missoula County Planning Director would monitor the effectiveness of and adjust as necessary the traffic control plan during construction. Before construction begins, Missoula County would install warning signs and notify the public and authorities of the construction schedules and phasing in an attempt to get motorists to avoid the intersection when possible.

Traffic Flow and Circulation

The local circulation of traffic within the south central portion of Missoula will be disrupted during the construction cycle of the project which is estimated to be six to ten months. Short term delays or temporary street closures are probable. This can be mitigated somewhat through Montana Department of Transportation and the City's Public Works Department procedures that include detour routing and adequate signage and scheduling road work at non-peak traffic times, etc.

Economic and Fiscal Impacts

Right-of-way agreements would have to be acquired prior to beginning construction. Construction activities at the Brooks/South/Russell intersection area may cause some short-term reduction in local business' trade due to interruption of circulation, but this can be mitigated by the contractor to some extent through detour routing and work scheduling measures. Proper handling of these problems can be included in the terms of reference and bid specifications for the job. Displacement of businesses may reduce local employment, but this can be mitigated through relocation assistance, which may find alternative locations within the same market area.

Regional Economy

Some perspective needs to be placed on the discussion of the human environmental setting for this project that is consonant with the kinds of socioeconomic impacts likely to flow from construction and operation of the intersection improvements. Looking at the construction phase first, an encyclopedic analysis of the region's construction industry does not seem appropriate. Missoula County's employed population numbers in excess of 53,300 (1993 estimate--BEA/REIS, 1995) with gross earnings of more than $1.12 billion dollars, of which the construction sector accounted for an estimated 2,700 workers and $74 million in annual earnings. One urban intersection project will not materially alter those magnitudes. A million dollars' worth of new construction will generate about 16 direct jobs and support another 13 elsewhere in the local economy (BEA, 1992), so it would take a very substantial project to absorb even, say, ten percent of the local construction labor force. Construction of the proposed project will have a small, but beneficial short-term impact on the regional economy.

CUMULATIVE IMPACTS

Cumulative impacts are the effects on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Human Environment

The Missoula Valley is experiencing ongoing residential, commercial, and industrial development. The result of this expected growth is more population, more employment, and more demand upon the area's transportation system.

Recent system improvements in the City of Missoula include the completion of the road widening project on Reserve St. from South 3rd St. to Brooks St. This project, completed in 1993, expanded Reserve St. to four lanes and upgrades signals at South 3rd St., South Ave., and Brooks St. The Brooks South Russell Intersection Project will provide an additional benefit to circulation and accommodation of traffic using new commercial and residential development.

Improvements at the Brooks/South/Russell intersection will contribute to the cumulative effect on land use in the City of Missoula as it will displace some existing commercial properties and residences and alter access to existing land uses. However, there is comparable housing and commercial space available in the valley to accommodate the relocation of displaced residents, who will be compensated for relocation. Planned and proposed residential and commercial development in the Missoula Valley will provide additional opportunities for local residents and business owners to remain in the valley if they desire. Utilities will be relocated as necessary, and access will be provided to accommodate existing land uses.

Natural Environment

Recently completed, ongoing, and future urban and suburban development, including highway construction, contributes toward the cumulative impacts to the natural environment. Because the project area is in a highly developed urban area, wildlife habitat is limited. As such, ongoing development in an already urban setting will have no cumulative effect on biological resources in the region.

The project area is officially within a non-attainment area for air quality standards, so avoidance of further air pollution is mandatory. The proposed action for the Brooks/South/Russell intersection is intended to alleviate congestion at the intersection and surrounding arterials, thus the cumulative impact to area air quality would be predominantly positive, as documented in the air quality analysis. The traffic forecasts used for the air quality analysis were based on the traffic generated by existing and anticipated future land used within the project area. The results of the analysis indicate that regional and localized air quality will not be adversely affected and, due to the lower congestion on Brooks/South/Russell and surrounding arterials, some improvement to area air quality will occur with implementation of the proposed action.

PERMITS AND APPROVALS

Approvals that will need to be obtained from federal entities prior to construction of the project include:

- Compliance with the Provisions of the Sole Source Aquifer Designation U.S. Environmental Protection Agency (see Chapter 3, Water Resources for more detail)
- Compliance with Section 106 of the National Historic Preservation Act - the State Historic Preservation Office will determine if any of the buildings on Sussex St. that were surveyed in August, 1996 are "eligible" for the National Register of Historic Places. It was determined that none were eligible and the process is completed.

State permits that would be required prior to construction include:

- Construction Dewatering General Discharge Permit authorized under the Montana Pollutant
- Discharge Elimination System
- General Permit to Discharge Treated Waste Water from Ground Water Remediation or Dewatering Operations

- Right-of-way agreements would need to be acquired from the local agency prior to beginning construction. No preliminary agreements have been made for any right-of-way acquisitions. Temporary construction easements may be required for final design and construction activities.

CHAPTER 4 - COMMENTS AND COORDINATION

CHAPTER 4 - COMMENTS AND COORDINATION

INTRODUCTION

A project coordination program was developed for the Brooks/South/Russell Intersection Project to ensure that members of the public and the appropriate federal, state, and local agencies were given adequate opportunity to be involved throughout the project. Public information meetings, scoping meetings, and a neighborhood meeting were held to collect and discuss the public's concerns about the project.

PUBLIC INVOLVEMENT PROGRAM

A public interaction process was created to encourage public interest, foster new ideas, and identify issues and concerns with the project. Two advisory committees were created, one comprised of members of the public and the other of technical specialists, to discuss and evaluate issues and alternatives throughout the process.

Citizen's Action Committee

In November 1993, a Citizen's Action Committee (CAC) was created to meet monthly with the City of Missoula and the contractors (Bell-Walker Engineers, now EarthTech, and Group 2000). The CAC, a group of citizen volunteers, reviewed the progress of the preliminary design and served as a liaison between the public, the contractor and the City. CAC members were appointed by the City of Missoula and represented a variety of business, environmental, recreation, transportation and neighborhood groups. The CAC members and their affiliations are listed in Chapter 5.

Members of the CAC, the City of Missoula, and representatives of each contractor met monthly and discussed the following topics:

11/10/93	First Meeting; explained project and CAC role
12/13/93	Reviewed public comments from scoping meeting
1/25/94	Dave Zielinski (Bell-Walker) explained the traffic modeling process
2/22/94	Marie Piper (Dames & Moore) explained environmental studies for the project
3/22/94	Bell-Walker demonstrated the use of Traffic Modeling to analyze preliminary alternatives
4/94	No meeting
5/24/94	Reviewed information scheduled for presentation at the June 9th city-wide neighborhood meeting
6/9/94	Citywide Neighborhood Meeting on preliminary alternatives at Russell School

7/26/94	Engineers from Bell-Walker discussed the process for choosing criteria for the matrix used in the selection of the three final alternatives
8/12/94	TAC meeting to discuss selection of final 3 alternatives
8/23/94	CAC received matrix scoring sheets and instructions on their use in scoring alternatives
9/13/94	CAC advised on Technical Advisory Committee selection of three alternatives for air quality modeling
11/94	CAC received air quality modeling results and advised on recommended alternative for public hearing
12/2/94	CAC meeting to discuss and select preferred alternative for presentation at public hearing
12/14/94	Public hearing on three final alternatives and preferred alternative presented
2/10/95	TAC, property owners and city officials met to discuss the South Ave. Realignment goals, evaluation criteria and variety of alternatives
3/2/95	CAC and property owners met with Kathleen Krager to discuss additional alternatives
3/3/95	City Council met with Kathleen Krager to discuss additional alternatives
4/21/95	East property owners and CAC discussed East Side Alternatives Nos. E1, E2, & E3
4/21/95	West property owners and CAC discussed West Side Alternatives No. W1
5/9/95	East property owners and CAC discussed East Side Alternatives
6/9/95	West property owners and CAC met to discuss West Side Alternatives Nos. W2 & W3
11/14/95	TAC meeting to discuss ranking of the West Side Alternatives
11/15/95	West property owners and CAC discussed all six West Side Alternatives
2/29/96	East property owners and CAC discussed only Alternative No. E3
3/21/96	East property owners and CAC discussed only Alternative No. E4
4/19/96	TAC, City, State and Federal officials met to discuss preferred alternatives
4/24/96	All property owners and CAC held a public forum to discuss the at-grade alternatives for South Avenue Realignment
6/2/96	Missoulian article describing the Brooks/South/Russell problems and solutions
7/16/96	Transportation Policy Coordinating Committee - discussion and decision of Brooks/South/Russell ranking in CMAQ Budget and funding constraints
10/3/96	Area business meeting initiated by Southgate Mall to discuss status of Brooks/South/Russell project

10/16/96	Missoula Transportation Plan Public Hearing - Public statements about need and issues with South Avenue Realignment of Brooks/South/Russell project

Technical Advisory Committee

The Technical Advisory Committee (TAC) for the Brooks/South/Russell intersection project provided a forum for discussion between the City/County of Missoula, the Montana Department of Transportation, and Bell-Walker Engineers(EarthTech). The Members of the TAC met throughout the project to discuss the alternatives and issues addressed in this document. The TAC members and their affiliations are listed in Chapter 5.

Public Meetings and Media Events

The purpose of the public scoping meeting, the neighborhood meeting and the public hearing was to provide a forum for the public to present concerns and ideas about the Brooks/South/Russell Intersection Project. In addition, information on the project was made available through a news conference, local newspaper articles and radio and television reports.

Public Scoping Meeting

On November 18, 1993, a public scoping meeting was held at the Fairgrounds Dance Building in Missoula, Montana. The meeting was an open house format with the public invited to attend anytime between 11:00am to 7:00pm. The purpose of the meeting was to inform the public of the scope, details, and anticipated schedule of the project. Displays included a video presentation, rendered aerial photographs of the overpass, display boards on the air quality modeling process, display boards on the traffic modeling process, a tentative schedule, and a study map.

During the scoping meeting the public had an opportunity to meet with the Citizens Action Committee members and leave written comments and suggestions. Many individuals participated by leaving comments on flip charts in the display areas. Others mailed in comments using the form provided with the Scoping Meeting newsletter, or wrote letters in the weeks following the meeting. Of the approximately 190 people attending the meeting, comments were received from more than 120 people. The comments and suggestions received were categorized according to the following issues: preliminary alternatives, environmental issues, or other issued specified by respondents.

Neighborhood Meeting

On June 9th, 1994, a Neighborhood Meeting was held on the six preliminary alternatives, at the Russell School in Missoula, from 7:00-9:00pm. Approximately 100 people attended the meeting to view displays on the alternatives, traffic modeling results and general project information. Dave

Zielinski and Gary Funkhouser of Bell-Walker Engineers Inc., presented details on the alternatives and traffic modeling. Bruce Bender, City Engineer, along with representatives from Bell-Walker, answered questions about the preliminary design process, the city's use of CMAQ funds and other transportation issues. Written comments were received from 16 people at the meeting.

News Conference

On September 13th, 1994, a news conference was conducted on the fairgrounds following the CAC meeting. Bruce Bender announced the selection of the three final alternatives. Gary Funkhouser issued a statement focusing on the methods used in the selection of the three alternatives. Bender and Funkhouser then responded to questions. The news conference was attended by representatives of the Missoulian and the Independent newspapers and KECI-TV and KPAX-TV television stations.

Public Workshop

A Public Workshop was held on December 15, 1994 in Missoula, Montana. Representatives from Bell-Walker Engineers and Dames & Moore were present to answer questions regarding the three final alternatives. Four hundred and sixty one (461) people signed in at the meeting. The public was encourage to leave comments, either on any of the various computer stations provided at the workshop or on comment sheets. Attendees could take their comment sheets with them and mail them to the Department of Public Works by December 31, 1994. Comments were received from 273 people at the meeting; while an additional 250 comments were received at the Department of Public Works. In addition, a petition was submitted against the overpass alternative, signed by 98 residents of the Missoula Manor, an apartment building for elderly residents located in the area. The workshop also provided a forum for a local protest group, Pass on the Overpass, who collected signatures on a petition to encourage the city not to choose the overpass alternative. This group also published a comment sheet in the Missoulian, which contributed to the large number of comments received in the mail by the City.

Hearing

A City Council hearing is scheduled to be held in Missoula in August 1997.

Newspaper/Radio/Television

Newspaper articles, editorials and public letters appeared in the Missoulian (local) and Kaimin (University of Montana) newspapers. Local TV stations (KECI-TV and KPAX-TV) and a local radio station (KUFM) also provided news stories and announcements for scheduled public meetings.

The Missoulian published stories following the progress of the project from the initial announcement of the proposed study in September 1993 through the public hearing in December 1994. In addition, editorials appeared in the Missoulian on September 16, 1993, June 5, 1994, August 28, 1994, March 7, 1996 and June 2, 1996.

Major Issues, Concerns and Opportunities Raised by the Public

Throughout the public participation process many concerns and issues were raised by the public through questions asked at public meetings, written comments and media editorials. Public comments have been compiled into three major issues categories: alternatives (comments specific to the proposed alternatives for improving the intersection); environmental issues (e.g., air quality); and other issues (includes broader issues regarding transportation and planning).

A summary of the concerns expressed by the public is provided below:

Scoping Meeting (11/18/93) - 190 attendees/120 written responses

Alternatives

- impacts to businesses and neighborhoods
- relocation of the county fairgrounds
- rerouting of traffic on surrounding streets
- impact on other intersections
- provisions for bicyclists
- pedestrian concerns (access, safety, and handicap accessibility)
- developing long term improvements consistent with growth

Environmental Issues

- residential burning alternatives and fines for non-compliance
- turning off engines at the intersection
- vehicle inspections
- planting trees and shrubs as carbon monoxide absorbers

Other Issues

- alternative modes of transportation
- visual concerns due to loss of mountain views and overpass structure if chosen alternative
- reducing SOVs and number of cars in general

Neighborhood Meeting (6/9/94) - approximately 100 attendees/16 written responses

Alternatives Issues

- costs associated with each alternative
- use of federal funds
- rerouting of traffic on surrounding streets
- air quality modeling for each alternative
- provisions for pedestrians and bicyclists
- impacts to businesses and neighborhoods
- visual impacts due to overpass
- safety and winter driving conditions with overpass

Environmental Issues

- redistribution of auto emissions
- alternative solutions to auto emissions problem
- impacts to people in the area

Other Issues

- transportation planning
- shifts in retailing away from Brooks/South/Russell
- Traffic Demand Management (TDM) strategies

Missoulian Newspaper Article - September 6th, 1994

Alternatives

- business concerns due to relocation, compensation, and clientele
- what do the visual improvements look like and what do they include
- relocation of fairgrounds to Fort Missoula
- changing traffic flow patterns to relieve congestion

Environmental Issues

- cutting down on single occupancy motorists

Other Issues

- visual concerns of views and character change of surroundings

Public Workshop (12/14/94) - approximately 461 attendees/594 written responses (273 received at the meeting/321 received in the mail)

Alternatives Issues

- impacts to businesses and neighborhoods
- impact to access of area businesses
- visual concerns of views and character change of surroundings
- costs associated with each alternative
- use of federal funds
- community impact/change of town's character
- construction impacts
- length of project construction/disruption
- rerouting of traffic on surrounding streets
- provisions for pedestrians and bicyclists
- safety and winter driving conditions with overpass/underpass
- pedestrian concerns (access, safety, and handicap accessibility)
- developing long term improvements consistent with growth
- potential for urban decay in area of overpass/underpass

Environmental Issues

- vehicle inspections
- noise impacts
- alternative solutions to auto emissions problem
- cutting down on single occupancy motorists

Other Issues

- alternative modes of transportation/Traffic Demand Management strategies
- transportation planning
- growth management

AGENCY CONTACTS

Agencies and organizations listed below, with jurisdiction and/or specific interest within the project area were contacted to solicit their input throughout the planning process and development of the EA.

Local Agencies

Missoula Department of Revenue
Missoula City Engineering Department
Missoula City/County Health Department

Missoula County Geological Survey
Missoula County Parks and Recreation
Missoula County Rural Planning
Office of Community Development
Western County Fair

Local Organizations

Clark Fork Coalition
Five Valleys Audubon Society
GMT Consultants Inc.
Montana Pictorial Histories
Mountain Line-Missoula Urban Transportation District

State Agencies

Montana Bureau of Mines & Geology
Montana Department of Fish, Wildlife and Park (Helena and Missoula Offices)
    - Parks Division
    - Wildlife Division
Montana Department of Health & Environmental Sciences
    - Air Quality Division
    - Solid & Hazardous Waste Bureau, Underground Storage Tank Program
    - Water Quality Bureau
Montana Department of Transportation
    - Planning and Development
    - Environmental Services
    - Right-of-Ways
Montana Natural Heritage Program
State Historical Preservation Office (Helena and Missoula Offices)
University of Montana
    - Anthropology Department, Archaeological Records
    - Cooperative Wildlife Research Unit

Federal Agencies

Federal Highway Administration
U.S.D.A. Forest Service
    - Lolo National Forest
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service
  - Ecological Services Office (Helena and Denver, CO Offices)

U.S. Soil Conservation Service

The agencies and organizations contacted by principal resource investigators for data and consultation throughout the process are shown on Table 4-1, Consultation Summary.

TABLE 4-1
Brooks/South/Russell Intersection Project Consultation Summary

ORGANIZATION	CONTACT NAME	TITLE	ADDRESS	CITY/STATE/ZIP	DATE	P=phone L=letter M=mtng.	SUBJECT
Ada County Highway District	Dorel Hanson		318 E. 37th Street	Boise, ID 83714	12/2/93	P	NPDES Permitting
City of Missoula	Bruce Bender	P.E.	435 Ryman	Missoula, MT 59802	11/4/93	P	Requested resource info
City of Missoula	Bruce Bender	P.E.	435 Ryman	Missoula, MT	11/5/93	P	Economic data
City of Missoula	Bruce Bender	Director of Public Works	435 Ryman	Missoula, MT	5/2/96	L	Selection of Preferred Alternative letter to Bell Walker Engrs.
Clark Fork Coalition	Jeff Smith		131 S. Higgins Avenue	Missoula, MT 59802	7/27/94	P	Water resources
County of Missoula		Assessor's Office		Missoula, MT 59802	4/8/96	P	Requested assessors data for socioeceonomic analysis
Department of Revenue	Jim Fairbanks	Regional Mgr., Property Assessment Div.	200 W. Broadway	Missoula, MT 59802	9/2/94	L	Socioeconomic Data
Environmental Protection Agency	Steve Bubrick		1200 6th Avenue/Mail Stop WD134	Seattle, WA 98101	12/2/93	P	NPDES Permitting
Environmental Protection Agency	Bill Monheiser			Denver, CO	8/4/94	P	EPA Review of Water Resources
Environmental Protection Agency	Jeff Houck		8ART-AP, Region 8, 999 18th Street, Suite 500	Denver, CO 80202	9/6/94	L	Air Quality Analysis Procedures
Environmental Protection Agency - Region 8	Jim Dunn		999 18th Street, Ste 500	Denver, CO 80202	11/10/93	P	EPA Review of project
Environmental Protection Agency - Region 8 - Stormwater	Vern Berry		999 18th Street, Suite 500	Denver, CO 80202	12/3/93	P	NPDES Permitting
Environmental Protection Agency	Catherine Sargeant		8ART-AP, Region 8, 999 18th Street, Suite 500	Denver, CO 80202	5/1/96	P	Transportation Conformity Regulations
Environmental Protection Agency - Region 8	Jim Dunn		999 18th Street, Ste 500	Denver, CO 80202	7/18/96	P	Approval letter for compliance with sole source aquifer regulations
Federal Highway Administration	Dave Miller		301 South Park, Drawer 10056	Helena, MT 59628	9/6/94	L	Air Quality Analysis Procedures
Federal Highway Administration	Dave Miller		301 South Park, Drawer 10056	Helena, MT 59628	9/8/94	P	Air Quality Modeling
Federal Highway Administration	Dale Paulson	Environmental Services	301 South Park, Drawer 10056	Helena, MT 59628	12/14/95	P	Approach to the EA for new alternatives
Five Valleys Audubon Society	Lynn Tennefoss	President		Missoula, MT	11/8/93	P	Christmas Bird Counts
Five Valleys Audubon Society	Willis Heron	Biologist		Missoula, MT	11/10/93	P	Christmas Bird Counts
GMT Consultants Inc.	Jay Crawford		P.O. Box 7847	Missoula, MT 59807	10/29/93	P	Soils info

TABLE 4-1
Brooks/South/Russell Intersection Project Consultation Summary

ORGANIZATION	CONTACT NAME	TITLE	ADDRESS	CITY/STATE/ZIP	DATE	P=phone L=letter M=mtng.	SUBJECT
Gillespie Realty	Cynthia Bryan		1020 South Avenue West	Missoula, MT 59801	2/22/96	L/M	Request for meeting to discuss project
Gillespie Realty	Cynthia Bryan		1020 South Avenue West	Missoula, MT 59801	2/22/96	L/M	Status Mtg. with Affected Landowners
Missoula City Engineering Department	Doug Harby				9/14/94	P	Stormwater Drainage
Missoula City/County Health Dept.	Jim Carlson		301 W. Alder	Missoula, MT 59802	11/5/93	P	Biology/Soils/Geology inventory info
Missoula City/County Health Dept.	Jim Carlson		301 W. Alder	Missoula, MT 59802	11/10/93	P	Water resources info
Missoula City/County Health Dept.	Allan English		301 W. Alder	Missoula, MT 59802	11/15/93	P	Geology info
Missoula City/County Health Dept.	Allen English		301 W. Alder	Missoula, MT 59802	7/14/94	P	Missoula Sole Source Aquifer
Missoula City/County Health Dept.	Chris Nielson-Cerquone	Environmental Health Specialist	301 W. Alder	Missoula, MT 59802	7/27/94	P	Water resources
Missoula City/County Health Dept.	Peter Neilson		301 W. Alder	Missoula, MT 59802	7/29/94	P	Water Quality Ordinances
Missoula City/County Health Dept.	Jim Carlson		301 W. Alder	Missoula, MT 59802	8/23/94	L	Preliminary Air Quality Analysis Info
Missoula City/County Health Dept.	Jim Carlson		301 West Alder	Missoula, MT 59802	9/6/94	L	Air Quality Analysis Procedures
Missoula City/County Health Dept.	Jim Carlson		301 W. Alder	Missoula, MT 59802	9/9/94	P	Air Quality Modeling
Missoula City/County Health Dept.	Jim Carlson		301 W. Alder	Missoula, MT 59802	9/15/94	L	Air Quality Analysis
Missoula County Geological Survey				Missoula, MT	7/14/94	P	Missoula County soil survey
Missoula County Parks & Rec.	Dan Rogers		100 Hickory	Missoula, MT 59801	11/8/93	P	Vegetation
Missoula County Parks & Rec.	Jim VanVausen		100 Hickory	Missoula, MT 59801	10/21/94	P	Missoula County Recreation Needs Assessment Survey
Missoula County Rural Planning	Tim Hall	Resource Specialist	200 W. Broadway	Missoula, MT 59802	10/15/93	P	Inventory data
Montana Bureau of Mines & Geology	Judy		1300 W. Park Street	Butte, MT 59701	10/19/93	P	Geology/groundwater info
Montana Bureau of Mines & Geology			1300 W. Park Street	Butte, MT 59701	10/29/93	P	Geology
Montana Cooperative Research Unit	Dr. Joe Ball		University of Montana	Missoula, MT 59812	11/5/93	P	Wildlife
Montana Cooperative Research Unit	John Malloy		University of Montana	Missoula, MT 59812	11/5/93	P	Wildlife info
Montana Dept. of Fish, Wildlife & Parks	John Firebaugh	Regional WL Biologist	3201 Spurgin Road	Missoula, MT 59801	10/14/93	P	Requested biology info
Montana Dept. of Fish, Wildlife & Parks	Dale		3201 Spurgin Road	Missoula, MT 59801	11/30/93	P	LWCF Sites

TABLE 4-1
Brooks/South/Russell Intersection Project Consultation Summary

ORGANIZATION	CONTACT NAME	TITLE	ADDRESS	CITY/STATE/ZIP	DATE	P=phone L=letter M=mtng.	SUBJECT
Montana Dept. of Fish, Wildlife & Parks	Mary Ellen McDonald		1420 E. Sixth Avenue	Helena, MT 59620	11/30/93	P	LWCF Sites
Montana Dept. of Fish, Wildlife & Parks	Mary Ellen McDonald		1420 E. Sixth Avenue	Helena, MT 59620	1/17/94	P	Info previously requested
Montana Dept. of Fish, Wildlife & Parks - Parks Division	Mary Ellen McDonald		1420 East Sixth Street	Helena, MT 59620	12/1/93	L	LWCF Sites
Montana Dept. of Fish, Wildlife & Parks - Parks Division	John Firebaugh	Regional Wildlife Manager	3201 Spurgin Rd.	Missoula, MT 59803	11/21/94	L	Letter evaluating wildlife issues for new alternative
Montana Dept. of Fish, Wildlife & Parks - Parks Division	John Firebaugh	Regional Wildlife Manager	3201 Spurgin Rd.	Missoula, MT 59803	4/22/96	L	Letter describing no wildlife issues
Montana Dept. of Health & Environmental Sciences			1400 Broadway/P.O. Box 200901	Helena, MT 200901	11/5/93	P	Underground storage tanks
Montana Dept. of Environmental Quality, Water Quality Division	Gretchen Bennitt		Cogswell Building, P.O. Box 2009011	Helena, MT 59620	9/6/94	L	Air Quality Analysis Procedures
Montana Dept. of Environmental Quality, Water Quality Division	Gretchen Bennitt		Cogswell Building, P.O. Box 2009011	Helena, MT 59620	9/12/94	P	Air Quality Analysis Procedures
Montana Dept. of Environmental Quality, Water Quality Division	Gretchen Bennitt		Cogswell Building, P.O. Box 2009011	Helena, MT 59620	3/21/95	P	Conformity Regulations
Montana Dept. of Health & Environmental Sciences - Air Quality Division	Karen Clavin	Air Quality Specialist - Technical Support Section		Helena, MT	8/23/94	L	CC of Fax to Jim Carlson
Montana Dept. of Health & Environmental Sciences - Air Quality Division	Karen Clavin	Air Quality Specialist - Technical Support Section		Helena, MT	8/23/94	P	Data Review Request
Montana Dept. of Health & Environmental Sciences - Water Quality Bureau	John Arrigo/Roxanne Lincoln			Helena, MT	8/3/94	P	Water Quality Permitting
Montana Dept. of Health & Environmental Sciences - Water Quality Bureau	Jack Thomas			Helena, MT 59620	8/5/94	P	Water Resources
Montana Dept. of Health & Welfare - Solid & Hazardous Waste Bureau - Underground Storage Tank Program	Candy Stenson		Cogswell Building	Helena, MT 59620	12/21/93	L	Underground storage tanks
Montana Dept. of Health and Environmental Sciences - Water Quality Bureau	Mike Pashik		1400 Broadway/P.O. Box 200901	Helena, MT 200901	11/10/93	P	MT Water Quality regs

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Brooks/South/Russell Intersection Project Consultation Summary

ORGANIZATION	CONTACT NAME	TITLE	ADDRESS	CITY/STATE/ZIP	DATE	P=phone L=letter M=mtng.	SUBJECT
Montana Dept. of Health and Environmental Sciences - Water Quality Bureau	Chris LaVene		1400 Broadway/P.O. Box 200901	Helena, MT 200901	7/27/94	P	Water resources
Montana Dept. of Transportation	Edrie Vinson		2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	10/14/93	P	Determination examples
Montana Dept. of Transportation	Julie Gavin		2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	10/19/93	P	Determination examples
Montana Dept. of Transportation	Karl Helvik	Environmental Services	2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	11/4/93	P	Examples of EA
Montana Dept. of Transportation	Karl Helvik	Environmental Services	2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	12/22/93	P	Determination review
Montana Dept. of Transportation	Dick Turner		2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	7/8/94	P	CMAQ
Montana Dept. of Transportation	Pat Saindon	Administrator - Transportation Planning Division	2701 Prospect Avenue, P.O. Box 201001	Helena, MT 59620	9/6/94	L	Air Quality Analysis Procedures
Montana Dept. of Transportation	Ross Tervo	Air Specialist	2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	3/24/95	P	PM 10 analysis
Montana Dept. of Transportation	Cora Helms	Environmental Specialist	2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	3/24/95	L	Highway Traffic Noise and Construction Noise Procedures
Montana Dept. of Transportation	Karl Helvik	Environmental Services	2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	12/14/95	P	Approach to the EA analysis
Montana Dept. of Transportation	John Axeline	Historian	2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	4/29/96	P	Need for recordation of buildings on Sussex St.
Montana Dept. of Transportation	Karl Helvik	Environmental Services	2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	5/7/96	L/P	Contents in EA; MEPA requirements
Montana Dept. of Transportation	Karl Helvik	Environmental Services	2701 Prospect Ave./P.O. Box 201001	Helena, MT 59620	5/7/96	P	Contents in EA
Montana Natural Heritage Program	David Genter	Coordinator	1515 East Sixth Avenue	Helena, MT 59620	10/14/93	P	Requested biology info
Montana Natural Heritage Program	Katherine Jurist	Coordinator	1515 East Sixth Avenue	Helena, MT 59620	5/1/96	L	Natural Resource Information System Species of Special concern info
Montana Pictorial History's	Stan Cohen	Historian		Missoula, MT	8/23/94	M	History of Missoula/Fairgrounds
Mountain Line - Missoula Urban Transportation District	Mike Kress		1221 Shakespeare	Missoula, MT 59802	7/20/94	P	Missoula county info
Mountain Line - Missoula Urban Transportation District	Mike Kress		1221 Shakespeare	Missoula, MT 59802	7/22/94	P	Cultural resources
Muth Consulting Engineers	Frank Muth		913 SW Higgins Avenue	Missoula, MT 59801	10/29/93	P	Soils Info
Muth Engineering	Frank Muth				9/19/94	L	Simulation Photography
Office of Community Development	Philip Maechling		435 Ryman	Missoula, MT 59802	9/2/94	L	Alternative Screening Process

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Brooks/South/Russell Intersection Project Consultation Summary

ORGANIZATION	CONTACT NAME	TITLE	ADDRESS	CITY/STATE/ZIP	DATE	P=phone L=letter M=mtng.	SUBJECT
State Historic Preservation Office			1410 8th Avenue/P.O. Box 201202	Helena, MT 59620	10/19/93	P	Cultural Resources info
State Historic Preservation Office	Stan Wilmoth	Archaeologist	1410 8th Avenue/P.O. Box 201202	Helena, MT 59620	10/21/93	P	Cultural Resources info
State Historic Preservation Office	Allen Matthews	Historic Preservation Officer		Missoula, MT	10/28/93	P	Cultural Resources info
State Historic Preservation Office	Stan Wilmoth	Archaeologist	1410 8th Avenue/P.O. Box 201202	Helena, MT 59620	11/10/93	P	Cultural sites list interpretation
State Historic Preservation Office	Allen Matthews	Historic Preservation Officer		Missoula, MT	7/22/94	P	Cultural resources
State Historic Preservation Office	Stan Wilmoth	Archaeologist	1410 8th Avenue/P.O. Box 201202	Helena, MT 59620	7/22/94	P	Cultural resources questions
The Missoulian	Kathleen	Librarian		Missoula, MT	3/3/94	P	Request for newspaper article
The Missoulian	Kathleen	Librarian		Missoula, MT	4/1/96	P	Request forReal Estate Section and Home Sales Price Information
U.S. Army Corps of Engineers	John Hintzman		Walla Walla District	Walla Walla, WA 99362	10/19/93	P	Maps
U.S. Fish & Wildlife Service	Kevin Shelley			Kalispell, MT	11/9/93	P	Peregrine Falcons
U.S. Fish & Wildlife Service - Ecological Services Office	Kemper McMaster	Field Supervisor	301 S. Park	Helena, MT 59626	10/14/93	P	Requested biology info
U.S. Fish & Wildlife Service - Ecological Services Office	Kemper McMaster	Field Supervisor	301 S. Park	Helena, MT 59626	10/19/94	L	Requested update on TES species
U.S. Fish & Wildlife Service - Ecological Services Office	Kemper McMaster	Field Supervisor	301 S. Park	Helena, MT 59626	11/21/94	L	No project related impacts to threatened or endangered species
U.S. Fish & Wildlife Service - Ecological Services Office	Bill Pearson		P.O. Box 25486/Denver Fed. Ctr.	Denver, CO 80225	10/19/93	P	Wetlands Inventory info
U.S. Forest Service - Lolo National Forest	Sue Reel	Nongame Wildlife Coordinator	Bldg. 24 Fort Missoula	Missoula, MT 59801	11/16/93	P	Wetlands info
U.S. Soil Conservation Service	John Blaine		5115 S.US Hwy. 93	Missoula, MT 59801	10/15/93	P	Soil
U.S. Soil Conservation Service	John Blaine		5115 S.US Hwy. 93	Missoula, MT 59801	10/21/93	P	Wetland inventory data
Univ. of Montana - Anthropology Dept. - Archaeological Records	Erin Driskell		University of Montana	Missoula, MT 59812	7/25/94	P	Cultural resources sites
Western Montana Fair	Sam Yewusiak		Fairgrounds	Missoula, MT	8/23/94	M	Cultural Resources Information
Western Montana Fair	Sam Yewusiak		Fairgrounds	Missoula, MT	11/17/94	P	Fairgrounds vegetation

CHAPTER 5 - LIST OF PREPARERS AND CONTRIBUTORS

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DAMES & MOORE

James Jensen - Project Manager, Environmental
Nancy Olmsted Everingham, C.W.D. - Technical Manager/Biological Resources
Terry Lane - Project Coordinator
Geoffrey Pool - Land Use/Visual Resources/CAD/GIS Specialist
Leslie Howell - Cultural Resources
Andrew Mork, P.Geo. - Water Resources/Earth Resources/Hazardous Materials

SUBCONTRACTORS

Robert T. Mott, Consulting Economist - Socioeconomic analysis
Armando F. Balloffett, Ph.D., P.E. - Balloffett & Associates - Noise Analysis
John R. Jaeckel, P.E. B.S. - HNTB - Air Quality Analysis
Matthew R. Klein, E.I.T. - HNTB - Air Quality Analysis

BELL-WALKER ENGINEERS (EarthTech)

Gilbert C. Walker, P.E./L.S. - Principal in Charge
Gary R. Funkhouser, P.E. - Project Manager/Transportation Engineering
Daniel A. Thompson, P.E. - Civil Engineering
David R. Kinzer, P.E./L.S. - Structural Engineering
David B. Zielinski, A.I.C.P. - Project Transportation Planner
Miguel Sandoval, E.I.T. - Transportation Modeling
Puvada Sivaramavittal, E.I.T. - Traffic Engineering
Franklin R. Muth, P.E. - Local Coordination, Data Gathering

CAC Members

Doug Anderson - Manager of Southgate Mall
Dennis Lerum - Director, Missoula Vo-Tech
Bill Tremper - Trempers Shopping Center
Andy Sponseller - Advocate for Open Space
Kathy Ogren - Bitterroot Motors
Bruce Zinne - Principal, Sentinel High School
Ken Stoltz - University of Montana
Mark Helean - Bag O Burger
John Williams - Bicycle Federation of America
Elaine Smith - Neighborhood Groups
Sam Yewusiak - Missoula County Fair Board

Scott Beach - Beach Transportation
Phil Smith - Communications Consultant
Tom Nettleton - Missoula Technology & Development Center
Bernadine Gantert - Summit Living Center
Dale Mahlum - Retired

TAC Members

Joe Aldegarie, P.E. - Public Works Director, City of Missoula
Bruce Bender, P.E. - City Engineer, City of Missoula
Carl Thompson - City Traffic Superintendent, City of Missoula
Jim Carlson - Environmental Health Director, Missoula City/County Health Department
Mike Kress - Director, Mountain Line
Jim Weaver - District Engineer, Montana Department of Transportation

CITY OF MISSOULA

Bruce Bender, P.E. - City Engineer

FEDERAL HIGHWAY ADMINISTRATION

Dale Paulson - Environmental Coordinator
Dave Miller - Planning Coordinator

MONTANA DEPARTMENT OF TRANSPORTATION

Joel M. Marshik - Manager, Environmental Services
Karl Helvik - Environmental Services

CHAPTER 6 - REFERENCES

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GENERAL

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Missoula County Association of Realtors, 1994. Home Buyer's Guide and Other Real Estate. Missoula County Association of Realtors, Missoula, Montana.

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Blaine, John, 1993. Soil Conservation Service, Missoula, Montana. Personal communication, October 21.

Craig, Cory, 1993. Assistant Data Manager, Montana Natural Heritage Program, Helena, Montana. Correspondence, October 22.

Firebaugh, John. Regional Wildlife Manager, Montana Department of Fish, Wildlife & Parks, Missoula, Montana. Correspondence (November 21, 1994) regarding no effect on wildlife and fisheries.

Firebaugh, John. Regional Wildlife Manager, Montana Department of Fish, Wildlife & Parks, Missoula, Montana. Correspondence (April 22, 1996) regarding no effect on wildlife and fisheries for new alternatives.

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Heron, Willis, 1993. Five Valleys Audubon Society, Missoula, Montana. Personal communication, November 10.

Hinshaw, John. Environmental Information Specialist, Montana Natural Heritage Program. Helena, Montana. Correspondence, October 26, 1994.

Jurist, Katherine. Project Information Coordinator for Montana Natural Heritage Program. Helena, Montana. Correspondence, May 1, 1996.

Malloy, John, 1993. Montana Cooperative Wildlife Research Unit, University of Montana, Missoula, Montana. Personal communication, November 5.

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Appendix A
Alternatives Development &
Screening Process

APPENDIX A - ALTERNATIVES DEVELOPMENT AND SCREENING PROCESS

APPENDIX A
ALTERNATIVES DEVELOPMENT AND SCREENING PROCESS

METHODS

Each alternative was evaluated to determine their relative technical merit in resolving the traffic congestion and air quality issues. Reduction in traffic congestion (as expressed by an increased level of service) was one of the most important technical criteria for the reasonableness of the identified alternatives. The measure of reduction in traffic congestion was performed through traffic modeling. Other criteria used to evaluate the alternatives were construction cost, availability of federal funding, facility relocation or right-of-way requirements, safety issues (for bicycles, pedestrians, and vehicles), constructability or design feasibility, traffic control, and potential for environmental and community impacts.

The computer model QRSII was used for traffic modeling for each of the alternatives. The model evaluated the location of workplaces and businesses to determine the shortest time path from the predicted origin of trips to their predicted destinations. The model calculates an acceptable speed along the shortest time path, and slower speeds for those estimated vehicle trips when the path gets close to its vehicle capacity. The various paths can then be assigned a Level of Service (LOS). The model was calibrated using 1992 traffic data which was the most current data available during the 1994 analysis.

Alternatives that performed poorly, or resulted in an unacceptable LOS for the intersection (Level F), were eliminated from further consideration during the initial screening of alternatives. The model was also used to evaluate those alternatives carried forward to a more detailed level of analysis.

ALTERNATIVES SCREENING PROCESS

This section provides a brief chronology of the alternatives screening process for the project. Some of the initial alternatives identified in the public scoping process (e.g., vehicle inspection/ maintenance programs and traffic signal coordination) were dismissed immediately because they did little or nothing to improve the traffic congestion or air quality at the intersection. The remaining alternatives carried forward into a more detailed level of analysis included:

- Traffic Demand Management Alternative
- Roundabout Alternative
- System Improvements to Surrounding Arterials
- Urban Interchange Alternative
- Grade Separation Overpass Alternative
- Grade Separation Underpass Alternative
- Combination Alternative
- No Action

The grade separation alternatives and the no action alternative were carried forward into the evaluation, comparison, and selection process. All other alternatives are described further in the Alternatives Considered But Rejected section of this chapter.

The No Action Alternative, defined as "doing nothing to fulfill the purpose and need for the project", is required under the National Environmental Policy Act (NEPA) and the implementing Council of Environmental Quality (CEQ) regulations (40 CFR 1500-1508).

Due to strong public opposition to the Grade Separation Overpass or Underpass alternatives, the City eliminated these two alternatives from consideration. A peer review process of the alternatives analysis was then conducted and the following new alternatives were identified:

- Relocate All Movements on South Ave. Alternative
- Relocate East Bound Movements from South Ave. Alternative
- Relocate West Bound Movements from South Ave. Alternative
- Relocate South Ave. Left Turns Alternative (1)
- Relocate South Ave. Left Turns Alternative (2)
- Relocate South Ave. through Movements Alternative

These new alternatives were evaluated based on the following additional criteria: adherence to community goals, impacts on businesses and neighborhoods, and the potential for developing business opportunities. Several of these at grade alternatives were evaluated and dismissed by the City, the Technical Advisory Committee and area business owners. Relocate All Movements on South Ave. was evaluated and compared and carried forward into the final alternatives development. Several options were identified for relocating movements off South Ave. where new roads would be developed to facilitate traffic flow and movement. These options located west of the B/S/R intersection were each labeled as W1, W2, W3, W4, W5, W6 and W7. Those options identified east of the B/S/R intersection were labeled E1, E2, E3, E4, and E5.

TRAFFIC DEMAND MANAGEMENT ALTERNATIVE

Traffic Demand Management (TDM) would attempt to reduce traffic congestion and vehicle emissions through Brooks/South/Russell by changing modes of transportation used by the public city-wide. More people would use buses, carpool, or ride bicycles which would decrease the number of single occupancy vehicles (SOVs) moving through the intersection. The 1985 Missoula Transportation Plan did not address TDM; however, a TDM program is now part of the 1995 Update of the City of Missoula's Transportation Plan.

Two specific TDM scenarios were considered. The first TDM scenario would reduce vehicle demand at the intersection by 5 percent (%) by assuming less SOVs would be driven through Brooks/South/Russell (refer to Table A-1). A 5% TDM would require the purchase of 30 buses (in addition to the 15 already in the fleet) and 175 vans, and would assume that the public would respond with increased bus ridership, use of bicycles, and carpooling (BWE, 1994). This scenario assumes that no specific improvements would be made at the intersection.

The second TDM scenario would reduce the vehicle demand by 20% by also assuming less SOV trips through Brooks/South/Russell throughout the day. The transportation mode assumptions for this scenario are also shown in Table A-1.

TABLE A-1
Transportation Mode Assumptions

Mode	Current Modal Split*	5% Modal Split	20% Modal Split
Mass Transit (Bus/Van)	n/a	2%	6%
Carpool/Vanpool	n/a	1%	1%
Bicycle	n/a	1%	1%
Walk/Telecommute	n/a	1%	1%
Single Occupancy Vehicle (SOV)	n/a	95%	80%
Total	**n/a**	**100%**	**100%**

* There is no data available on the current modal split (1994).

The 5% modal split alternative offers a realistic goal for traffic demand management; however, as a stand alone alternative, with no improvements to the intersection, the 5% modal split would result in a LOS of F, and would not reduce traffic congestion or vehicle emissions at Brooks/South/Russell. Estimates of the costs to implement the 5% modal split include $6.5 million in capital costs for the purchase of buses and vans, and $1.23 million in annual operating costs of the expanded fleet.

The TDM 5% modal split alternative was eliminated as a stand alone alternative because it does nothing to resolve traffic congestion or air quality problems at the intersection.

The 20% modal split alternative is a positive goal for the community to have, according to a TDM specialist consulted by the City, but realistically is not achievable in the near future. Traffic modeling revealed that the 20% modal split would not remove enough traffic from Brooks/South/Russell leaving the intersection with an LOS of F. Costs to implement this strategy would be prohibitively high and even if fully implemented would not adequately solve the traffic and air quality problems at the intersection. Also, this alternative requires commitments by local residents that could not be guaranteed in the near-term. Therefore, the 20% modal split TDM was also rejected as a stand-alone alternative.

Facility Relocation/Right-of-Way Requirements - There are no specific requirements to accommodate buses or other traffic demand management techniques.

Other Environmental Impacts - Site impacts associated with new facilities (e.g., bus barns, etc.). Subsidies may be needed for the bus program (i.e., taxes to cover local costs).

ROUNDABOUT ALTERNATIVE

The roundabout alternative was considered an important option by the members of the public attending the November 1993 scoping meeting in Missoula. This alternative offers an "at-grade" solution, which most of the public agreed was most compatible with the visual image of Missoula.

The roundabout was analyzed to relieve traffic congestion using the RODEL analysis program. None of the variety of sizes or configurations could adequately handle the traffic congestion problem without taking significant amounts of property for right-of-way from both private owners and from the county fairgrounds. For example, one configuration considered was a roundabout approximately 61 meters (200 feet) in diameter. Another was to construct one of the streets, preferably Brooks, over or under the roundabout. Roundabout options would all require additional right-of-way from the fairgrounds as well as other surrounding residential and commercial land uses.

The roundabout was eliminated from consideration because it did not provide the capacity necessary for the volume of traffic going through Brooks/South/Russell. It was not possible to incorporate all of the necessary turning movements in the roundabout design to allow it to function effectively. In addition, the amount of right-of-way acquisition and consequent socioeconomic impact would have been prohibitive.

SYSTEM IMPROVEMENTS TO SURROUNDING ARTERIALS

System improvements to the surface street system outside of the intersection was suggested by the public in the November 1993 scoping meeting as having potential to reduce traffic at the intersection. Most of these suggestions were eliminated because they were operationally infeasible or did not meet the purpose and need of the project.

The system improvements considered were improvements on the following road segments:

- Stephens from S.W. Higgins to Mount Ave.
- Pattee Creek Drive and Ernest Ave. from Higgins to Reserve
- Add west connection to Southgate Mall on Dearborn St.
- Extension of 5th/6th couplet to Reserve St.
- South 14th Ave. and Mount Ave. from Higgins to Reserve
- Bancroft from Pattee Creek Drive to Mount Ave.
- Johnson and Schilling from Brooks to Mount
- Improve Higgins, S.W. Higgins and 39th St. from South Ave. to Reserve St.

Traffic modeling was completed using each of these system-wide improvements as an individual alternative to making improvements to the intersection. None of these improvements, as stand alone alternatives, significantly improve the traffic congestion or air quality problems at the Brooks/South/Russell. The only alternatives that had any appreciable benefit to the intersection were improvements specific to the intersection (i.e. overpass or underpass).

All of the system improvements were modeled (using available 1992 data) to determine what percentage of benefits were gained from intersection improvements versus system improvements. The results of the modeling indicated that intersection improvements would provide about 90% of the total benefit with system improvements contributing about 10% of the total benefit.

Each system improvement was then modeled with the underpass and overpass to determine if any combination of system improvements with intersection improvements would be able to contribute toward the remaining 10% of the total benefit (as indicated above). Of all of the system improvements, Higgins and Reserve Sts. provided approximately 90% of the remaining total benefit. In other words, project-wide, the intersection improvements would provide 90% of the total benefit and improvements to Higgins and Reserve would provide 9% of the total benefit. The remaining system improvements would each account for less than 1% of the total benefit and were therefore eliminated from further consideration.

Due to the results of the modeling, system improvements at Higgins and Reserve were combined with the intersection improvements (overpass or underpass) into the combination alternative. The combination alternative was carried forward through the detailed analysis.

Traffic congestion would remain at the intersection, this alternative would not solve the air quality problem in this location. Would not meet the project's purpose and need.

The MDT will oversee the selection of the alternatives, as well as the final design, construction, and operation of the selected alternative. The Federal Highway Administration (FHWA) is the federal lead agency and will sign the Finding of No Significant Impact (FONSI) if so determined by the project. Funding for the improvements at the intersection may be available through the Congestion Mitigation/Air Quality (CMAQ) Program under the ISTEA (1991) (refer to Chapter 1, Project Costs and Funding).

Facility Relocation/Right-of-Way Requirements - There would likely be the removal of residences and commercial/industrial properties with this alternative.

Other Environmental Impacts - unknown impacts associated with these improvements.

COMBINATION ALTERNATIVE

This alternative included constructing an overpass or underpass at the intersection combined with improvements of Higgins St./39th St. from South 5th St. to U.S. 93 and North Reserve St. from South 3rd St. to I-90. Traffic signals would be installed where appropriate to meter the flow of traffic and gain maximum effectiveness.

This alternative was eliminated from consideration because costs were determined to be prohibitive (estimated $7.6 million in addition to the costs of the overpass or underpass), with CMAQ funding only potentially available for the overpass or underpass. Carbon monoxide (CO) concentrations for

Brooks/South/Russell showed little to no improvement when the combination improvements were modeled with the overpass and underpass.

On November 17, 1994, a coordination meeting was held between the Federal Highway Administration, the Montana Department of Transportation, the City of Missoula, the Office of Community Development, the Missoula City/County Health Department and the Consultants. It was determined that since the system improvements to Higgins/39th St. and North Reserve St. would not result in the attainment of federal air quality standards at Brooks/South/Russell for the design year (2015), these system improvements were not considered "connected and related" actions and should be considered in a separate environmental document. The Montana Department of Transportation is currently conducting a separate Environmental Assessment and design studies to improve to North Reserve St. from South 3rd St. to I-90.

Air Quality - Traffic flows would improve, thus air quality would be expected to improve in the vicinity of the intersection.

Facility Relocation/Right-of-Way Requirements - There would likely be the removal of residences and commercial/industrial properties with this alternative.

Other Environmental Impacts - Anticipated impacts include removal and disposal of waste material and noise and visual impacts. Other unknown impacts would be associated with the system-wide improvements.

URBAN INTERCHANGE ALTERNATIVE

The idea of an urban interchange evolved from the November 1993 public scoping meeting. The engineering team developed and evaluated many different interchange options for Brooks/South/Russell with the goal of providing the same turning movements as the existing intersection. The modeled design provided partial access from South Ave. to Brooks St., while Russell St. would be closed to travel either north or south of South Ave. Closure of Russell to through traffic would be required in the vicinity of Brooks/South/Russell due to conflicts with entry/exit ramps to Brooks St.

Traffic modeling was completed and resulted in a LOS D. This alternative was eliminated from further consideration because of the high costs, failure to improve air quality (due to stopping and starting), extensive right-of-way requirements, visual impacts of the structures (i.e., overpass and ramps), and high social and economic effects on adjacent property values.

Air Quality - Traffic congestion would remain at the intersection, thus alternative would not solve the air quality problem in this location. Would not meet the project's purpose and need.

Facility Relocation/Right-of-Way Requirements - Would likely remove several residences and several commercial businesses. May also have an impact on the fairgrounds property and buildings.

Other Environmental Impacts - Visual impacts of overpass and ramps may be considered by some local residents as being uncharacteristic of urban Missoula. Noise impacts may also be of concern with this alternative. Some social and economic effects including impact on property values.

GRADE SEPARATION ALTERNATIVES

Grade Separation - Overpass Alternative in Existing Right-of-Way

This alternative consisted of constructing an overpass on Brooks St. over a conventional four-way approach intersection of Russell St. and South Ave. The overpass would be a through street with no turning movements at the intersection. The intersection below the overpass would be signalized.

This alternative would construct the overpass using the existing Brooks right-of-way immediately adjacent to the county fairgrounds. This alternative was eliminated from further consideration for the following reasons: a longer structure overall was required to accommodate the higher span which would affect access and road closure along Brooks; the amount of right-of-way acquisition would be prohibitive; and design difficulties were foreseen in placing the support members for the structure.

Grade Separation Overpass Alternative

This alternative would consist of building a structure on Brooks St. over a conventional intersection of Russell St. and South Ave. The overpass would be a through street with no turning movements at the intersection. The intersection below the overpass would be signalized.

This overpass alternative is derived from a second design option of the preceding alternative, that is to shift the centerline alignment to the north as much as 15.2 meters (50 feet) to a avoid right-of-way take of the county fairgrounds.

This alternative was considered a viable alternative that would relieve the traffic congestion and air quality (i.e., carbon monoxide) problems at Brooks/South/Russell. It would be expected to keep the city in compliance with federal carbon monoxide limits through the year 2015, improve safety, provide infrastructure for bike/pedestrians, and relieve traffic congestion.

The grade separation overpass alternative was presented on December 15, 1994 in a public workshop in Missoula as one of three feasible alternatives (along with the Grade Separation Underpass and No Action). Public opposition to the overpass and underpass was substantial, with over 76% of the 273 commenters preferring the No Action alternative. An additional 321 comments were received in the mail, with 94% preferring the No Action alternative. A petition was submitted against the overpass alternative, signed by 98 residents of the Missoula Manor, an apartment building for elderly residents located in the area. The workshop also provided a forum for a local protest group, Pass on the Overpass, who collected signatures on a petition to encourage the city not to choose the overpass alternative.

Citizens were primarily concerned with the economic impact of the overpass (or underpass), as well as the visual intrusion an overpass structure would have on the character of the community. Many felt that the cost of the Overpass (approximately $7.5 million) and the Underpass (approximately $8 million) was prohibitive. Other expressed concern over the possible use of federal tax money, which they viewed as their dollars, being used for a project that was largely unwanted by the majority of the community.

This alternative was eliminated by the City due to strong opposition by the public.

Air Quality - Traffic flows would improve, thus air quality would be expected to improve in the vicinity of the intersection. Would meet the project's purpose and need.

Facility Relocation/Right-of-Way Requirements - Would likely remove a couple of residences and at least one commercial business.

Other Environmental Impacts - Visual impacts of overpass may be considered by some local residents as being uncharacteristic of urban Missoula. Noise impacts may also be of concern with this alternative.

Some social and economic impacts expected.

Grade Separation Underpass Alternative

This alternative involved an underpass on Brooks St. using the existing easement. Traffic flows on Reserve and South would continue above the underpass with a signalized intersection.

Right-of-way requirements would use the existing right-of-way easement. This alternative would likely impact two residential properties (doing business as commercial properties) and four commercial properties. The benefits of the underpass are the similar to the overpass, except for less improvement in air quality. Environmental concerns include the removal and disposal of waste material, groundwater and sediment control into the Missoula Aquifer, drainage, socioeconomic impacts, and utility relocations.

This alternative was also carried forward as a viable alternative into the public workshop on December 15, 1994 (see discussion above). This alternative was also eliminated by the City due to strong opposition by the public.

Air Quality - Traffic flows would improve, thus air quality would be expected to improve in the vicinity of the intersection.

Facility Relocation/Right-of-Way Requirements - Would likely remove a couple of residences and at least one commercial business.

Other Environmental Impacts - Removal and disposal of waste material may be of some concern for groundwater and sediment control. Some social and economic impacts expected.

Relocate South Avenue Alternatives

A series of at grade alternatives involving South Ave. were considered but eliminated during the phase of work following the rejection of the grade separation alternatives by the public. The South Ave. Realignment alternatives that were eliminated include:

- Relocate East Bound Movements from South Ave. Alternative
- Relocate South Ave. Left Turns Alternative (1)
- Relocate South Ave. Left Turns Alternative (2)

Appendix B
Hazardous Materials Survey

APPENDIX B - HAZARDOUS MATERIALS SURVEY

SITE ASSESSMENT REPORT
ONE MILE

DETAILS

PROPERTY AND THE ADJACENT AREA (within 1/8 mile)

VISTA Address*:	**BURGER KING** **2405 BROOKS ST** **MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	4955550 0.00 MI / ADJACENT Point	Map ID **1A**

STATE LUST - State Leaking Underground Storage Tank / SRC# 2427	Agency ID:	3-210677

Agency Address:	*BURGER KING* *2405 BROOKS ST* *MISSOULA, MT*
Tank Status:	*NOT AVAILABLE*
Media Affected:	*NOT AVAILABLE*
Leak Cause:	*UNAVAILABLE*
Remedial Action:	*NOT AVAILABLE*
Remedial Status 1:	*NOT AVAILABLE*
Remedial Status 2:	*NOT AVAILABLE*
Fields Not Reported:	*Discovery Date, Substance, Quantity (Units), Leak Source*

STATE UST - State Underground Storage Tank / SRC# 2261	Agency ID:	3-210677

Agency Address:	*BURGER KING* *2405 BROOKS ST* *MISSOULA, MT*
Underground Tanks:	*NOT REPORTED*
Aboveground Tanks:	*NOT REPORTED*
Tanks Removed:	*NOT REPORTED*

Tank ID:	*NOT REPORTED*	**Tank Status:**	*REMOVED*
Tank Contents:	*NOT REPORTED*	**Leak Monitoring:**	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	**Tank Piping:**	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	**Tank Material:**	*NOT AVAILABLE*

VISTA Address*:	**U OF M - COLLEGE OF TECHNOLOGY** **3639 SOUTH AVE WEST** **MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	5385737 0.00 MI / ADJACENT Point	Map ID **1B**

RCRA-SmGen - RCRA-Small Generator / SRC# 2685	EPA ID:	MTD982647828

Agency Address:	*SAME AS ABOVE*
Generator Class:	*GENERATORS WHO GENERATE LESS THAN 100 KG./MONTH OF NON-ACUTELY HAZARDOUS WASTE.*

*** VISTA address includes enhanced city and ZIP.**

PROPERTY AND THE ADJACENT AREA (within 1/8 mile) CONT.

VISTA Address*:	**MISSOULA VOCATIONAL TECH CENTER** **3639 S AVE W** **MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	456016 0.00 MI / ADJACENT Point	Map ID **1B**
STATE LUST - State Leaking Underground Storage Tank / SRC# 2427		Agency ID:	3-206941	

Agency Address:	*MISSOULA VOCATIONAL TECH CENTER* *3639 S AVE W* *MISSOULA, MT*
Tank Status:	*NOT AVAILABLE*
Media Affected:	*NOT AVAILABLE*
Leak Cause:	*UNAVAILABLE*
Remedial Action:	*NOT AVAILABLE*
Remedial Status 1:	*NOT AVAILABLE*
Remedial Status 2:	*NOT AVAILABLE*
Fields Not Reported:	*Discovery Date, Substance, Quantity (Units), Leak Source*

STATE UST - State Underground Storage Tank / SRC# 2261		Agency ID:	3-206941

Agency Address:	*MISSOULA VOCATIONAL TECH CENTER* *3639 S AVE W* *MISSOULA, MT*
Underground Tanks:	*2*
Aboveground Tanks:	*NOT REPORTED*
Tanks Removed:	*NOT REPORTED*

Tank ID:	*NOT REPORTED*	**Tank Status:**	*NOT AVAILABLE*
Tank Contents:	*NOT REPORTED*	**Leak Monitoring:**	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	**Tank Piping:**	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	**Tank Material:**	*NOT AVAILABLE*

VISTA Address*:	**MISSOULA VO-TECH CENTER** **3639 SOUTH AVENUE. WEST** **MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	3405052 0.00 MI / ADJACENT Point	Map ID **1B**
CERCLIS / SRC# 2739		EPA ID:	MTD982647828	

Agency Address:	*SAME AS ABOVE*
NPL Status:	*NOT A PROPOSED, CURRENT, OR DELETED NPL SITE*
Site Ownership:	*COUNTY OWNED*
Lead Agency:	*NO DETERMINATION*
Site Description:	*ENGINE REPAIRS ARE CONDUCTED AT THE MISSOULA VO-TECH CENTER LOCATED AT 3629 SO. AVE. WEST. HAZARDOUS WASTES ARE GENERATED FROM THIS MAINTENANCE OPERATION.*

Event Type:	**Lead Agency:**	**Event Status:**	**Start Date:**	**Completion Date:**
DISCOVERY	*STATE, FUND FINANCED*	*UNKNOWN*	*NOT REPORTED*	*AUGUST 9, 1989*
PRELIMINARY ASSESSMENT	*STATE, FUND FINANCED*	*NO FURTER REMEDIAL ACTION PLANNED*	*NOT REPORTED*	*OCTOBER 2, 1989*

VISTA Address*:	**BROOKS AVENUE DAIRY QUEEN** **2515 BROOKS** **MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	5344036 0.03 MI / SW Point	Map ID **2**
STATE UST - State Underground Storage Tank / SRC# 2261		Agency ID:	3-211912	

Agency Address:	*BROOKS AVENUE DAIRY QUEEN* *2515 BROOKS* *MISSOULA, MT*
Underground Tanks:	*NOT REPORTED*
Aboveground Tanks:	*NOT REPORTED*
Tanks Removed:	*NOT REPORTED*

PROPERTY AND THE ADJACENT AREA (within 1/8 mile) CONT.

Tank ID:	*NOT REPORTED*	Tank Status:	*REMOVED*
Tank Contents:	*NOT REPORTED*	Leak Monitoring:	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	Tank Piping:	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	Tank Material:	*NOT AVAILABLE*

VISTA Address*:	BROOKS AVENUE DAIRY QUEEN DOMESTIC WELL 2515 BROOKS MISSOULA, MT	VISTA ID#: Distance/Direction: Plotted as:	2286221 0.03 MI / SW Point	Map ID 2
STATE LUST - State Leaking Underground Storage Tank / SRC# 2427		Agency ID:	3-211912	

Agency Address:	*SAME AS ABOVE*
Tank Status:	*NOT AVAILABLE*
Media Affected:	*NOT AVAILABLE*
Leak Cause:	*UNAVAILABLE*
Remedial Action:	*NOT AVAILABLE*
Remedial Status 1:	*NOT AVAILABLE*
Remedial Status 2:	*NOT AVAILABLE*
Fields Not Reported:	*Discovery Date, Substance, Quantity (Units), Leak Source*

VISTA Address*:	TLC CAR WASH INC 2500 BROOKS STREET MISSOULA, MT 59801	VISTA ID#: Distance/Direction: Plotted as:	2279344 0.03 MI / SW Point	Map ID 2
STATE UST - State Underground Storage Tank / SRC# 2261		Agency ID:	3-210902	

Agency Address:	*TLC CAR WASH INC* *2500 BROOKS STREET* *MISSOULA, MT*
Underground Tanks:	*3*
Aboveground Tanks:	*NOT REPORTED*
Tanks Removed:	*NOT REPORTED*

Tank ID:	*NOT REPORTED*	Tank Status:	*NOT AVAILABLE*
Tank Contents:	*NOT REPORTED*	Leak Monitoring:	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	Tank Piping:	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	Tank Material:	*NOT AVAILABLE*

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)

VISTA Address*:	CENEX SELF-SERVE-MISSOULA 1108 W. CENTRAL MISSOULA, MT 59801	VISTA ID#: Distance/Direction: Plotted as:	2279887 0.13 MI / NE Point	Map ID 3A
STATE LUST - State Leaking Underground Storage Tank / SRC# 2427		Agency ID:	3-208907	

Agency Address:	*CENEX SELF-SERVE-MISSOULA* *1108 W. CENTRAL* *MISSOULA, MT*
Tank Status:	*NOT AVAILABLE*
Media Affected:	*NOT AVAILABLE*
Leak Cause:	*UNAVAILABLE*
Remedial Action:	*NOT AVAILABLE*
Remedial Status 1:	*NOT AVAILABLE*
Remedial Status 2:	*NOT AVAILABLE*
Fields Not Reported:	*Discovery Date, Substance, Quantity (Units), Leak Source*

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* VISTA address includes enhanced city and ZIP.

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile) CONT.

STATE LUST - State Leaking Underground Storage Tank / SRC# 2427	Agency ID:	3-208907

Agency Address: *CENEX SELF-SERVE-MISSOULA*
1108 W. CENTRAL
MISSOULA, MT
Tank Status: *NOT AVAILABLE*
Media Affected: *NOT AVAILABLE*
Leak Cause: *UNAVAILABLE*
Remedial Action: *NOT AVAILABLE*
Remedial Status 1: *NOT AVAILABLE*
Remedial Status 2: *NOT AVAILABLE*
Fields Not Reported: *Discovery Date, Substance, Quantity (Units), Leak Source*

3A

STATE UST - State Underground Storage Tank / SRC# 2261	Agency ID:	3-208907

Agency Address: *CENEX SELF-SERVE-MISSOULA*
1108 W. CENTRAL
MISSOULA, MT
Underground Tanks: *3*
Aboveground Tanks: *NOT REPORTED*
Tanks Removed: *NOT REPORTED*

Tank ID:	*NOT REPORTED*	Tank Status:	*NOT AVAILABLE*
Tank Contents:	*NOT REPORTED*	Leak Monitoring:	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	Tank Piping:	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	Tank Material:	*NOT AVAILABLE*

VISTA Address*:	**P C WOEHR INC.** **2130 BROOKS STREET** **MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	4955549 0.18 MI / NE Point	Map ID **3B**

STATE UST - State Underground Storage Tank / SRC# 2261	Agency ID:	3-204112

Agency Address: *P C WOEHR INC.*
2130 BROOKS STREET
MISSOULA, MT
Underground Tanks: *4*
Aboveground Tanks: *NOT REPORTED*
Tanks Removed: *NOT REPORTED*

Tank ID:	*NOT REPORTED*	Tank Status:	*NOT AVAILABLE*
Tank Contents:	*NOT REPORTED*	Leak Monitoring:	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	Tank Piping:	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	Tank Material:	*NOT AVAILABLE*

VISTA Address*:	**U.S. POST OFFICE** **1100 W KENT** **MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	2281748 0.19 MI / NE Point	Map ID **3C**

STATE UST - State Underground Storage Tank / SRC# 2261	Agency ID:	3-202805

Agency Address: *U.S. POST OFFICE*
1100 W KENT
MISSOULA, MT
Underground Tanks: *1*
Aboveground Tanks: *NOT REPORTED*
Tanks Removed: *NOT REPORTED*

Tank ID:	*NOT REPORTED*	Tank Status:	*NOT AVAILABLE*
Tank Contents:	*NOT REPORTED*	Leak Monitoring:	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	Tank Piping:	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	Tank Material:	*NOT AVAILABLE*

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* VISTA address includes enhanced city and ZIP.

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile) CONT.

VISTA Address*:	**BROOKS STREET SINCLAIR 2650 BROOKS MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	2277496 0.14 MI / SW Point	Map ID **4A**
STATE UST - State Underground Storage Tank / SRC# 2261		Agency ID:	3-205229	

Agency Address:	*BROOKS STREET SINCLAIR 2650 BROOKS MISSOULA, MT*
Underground Tanks:	*NOT REPORTED*
Aboveground Tanks:	*NOT REPORTED*
Tanks Removed:	*NOT REPORTED*

Tank ID:	*NOT REPORTED*	**Tank Status:**	*REMOVED*
Tank Contents:	*NOT REPORTED*	**Leak Monitoring:**	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	**Tank Piping:**	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	**Tank Material:**	*NOT AVAILABLE*

VISTA Address*:	**MISSOULA NISSAN INC 2715 BROOKS MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	4953851 0.21 MI / SW Point	Map ID **4B**
STATE UST - State Underground Storage Tank / SRC# 2261		Agency ID:	3-203955	

Agency Address:	*MISSOULA NISSAN INC 2715 BROOKS MISSOULA, MT*
Underground Tanks:	*NOT REPORTED*
Aboveground Tanks:	*NOT REPORTED*
Tanks Removed:	*NOT REPORTED*

Tank ID:	*NOT REPORTED*	**Tank Status:**	*REMOVED*
Tank Contents:	*NOT REPORTED*	**Leak Monitoring:**	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	**Tank Piping:**	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	**Tank Material:**	*NOT AVAILABLE*

VISTA Address*:	**VILLAGE 1-HOUR CLEANERS 1004 SOUTH AVENUE WEST MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	453854 0.17 MI / E Point	Map ID **5A**
RCRA-SmGen - RCRA-Small Generator / SRC# 2685		EPA ID:	MTD981548472	

Agency Address:	*SAME AS ABOVE*
Generator Class:	*GENERATORS WHO GENERATE 100 KG./MONTH BUT LESS THAN 1000 KG./MONTH OF NON-ACUTELY HAZARDOUS WASTE*

VISTA Address*:	**MONTANA POWER CO - MISSOULA DIVISION 1903 RUSSELL MISSOULA, MT 59801**	VISTA ID#: Distance/Direction: Plotted as:	3403986 0.23 MI / N Point	Map ID **6**
RCRA-SmGen - RCRA-Small Generator / SRC# 2685		EPA ID:	MTD981545072	

Agency Address:	*SAME AS ABOVE*
Generator Class:	*GENERATORS WHO GENERATE LESS THAN 100 KG./MONTH OF NON-ACUTELY HAZARDOUS WASTE.*

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* VISTA address includes enhanced city and ZIP.

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile) CONT.

VISTA Address*:	MPC SERVICE CENTER 1900 RUSSELL MISSOULA, MT 59801	VISTA ID#: Distance/Direction: Plotted as:	2284229 0.24 MI / N Point	Map ID 6

STATE LUST - State Leaking Underground Storage Tank / SRC# 2427	Agency ID:	3-201182

Agency Address:	*MPC SERVICE CENTER* *1900 RUSSELL* *MISSOULA, MT*
Tank Status:	*NOT AVAILABLE*
Media Affected:	*NOT AVAILABLE*
Leak Cause:	*UNAVAILABLE*
Remedial Action:	*NOT AVAILABLE*
Remedial Status 1:	*NOT AVAILABLE*
Remedial Status 2:	*NOT AVAILABLE*
Fields Not Reported:	*Discovery Date, Substance, Quantity (Units), Leak Source*

STATE UST - State Underground Storage Tank / SRC# 2261	Agency ID:	3-201182

Agency Address:	*MPC SERVICE CENTER* *1900 RUSSELL* *MISSOULA, MT*
Underground Tanks:	*2*
Aboveground Tanks:	*NOT REPORTED*
Tanks Removed:	*NOT REPORTED*

Tank ID:	*NOT REPORTED*	Tank Status:	*NOT AVAILABLE*
Tank Contents:	*NOT REPORTED*	Leak Monitoring:	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	Tank Piping:	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	Tank Material:	*NOT AVAILABLE*

VISTA Address*:	OPPORTUNITY RESOURCES INC. 2821 RUSSELL MISSOULA, MT 59801	VISTA ID#: Distance/Direction: Plotted as:	4868674 0.24 MI / S Point	Map ID 7

RCRA-SmGen - RCRA-Small Generator / SRC# 2685	EPA ID:	MT0000130328

Agency Address:	*SAME AS ABOVE*
Generator Class:	*GENERATORS WHO GENERATE LESS THAN 100 KG./MONTH OF NON-ACUTELY HAZARDOUS WASTE.*

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)

VISTA Address*:	SENTINEL HIGH SCHOOL 901 S AVE W MISSOULA, MT 59801	VISTA ID#: Distance/Direction: Plotted as:	2284991 0.26 MI / E Point	Map ID 5

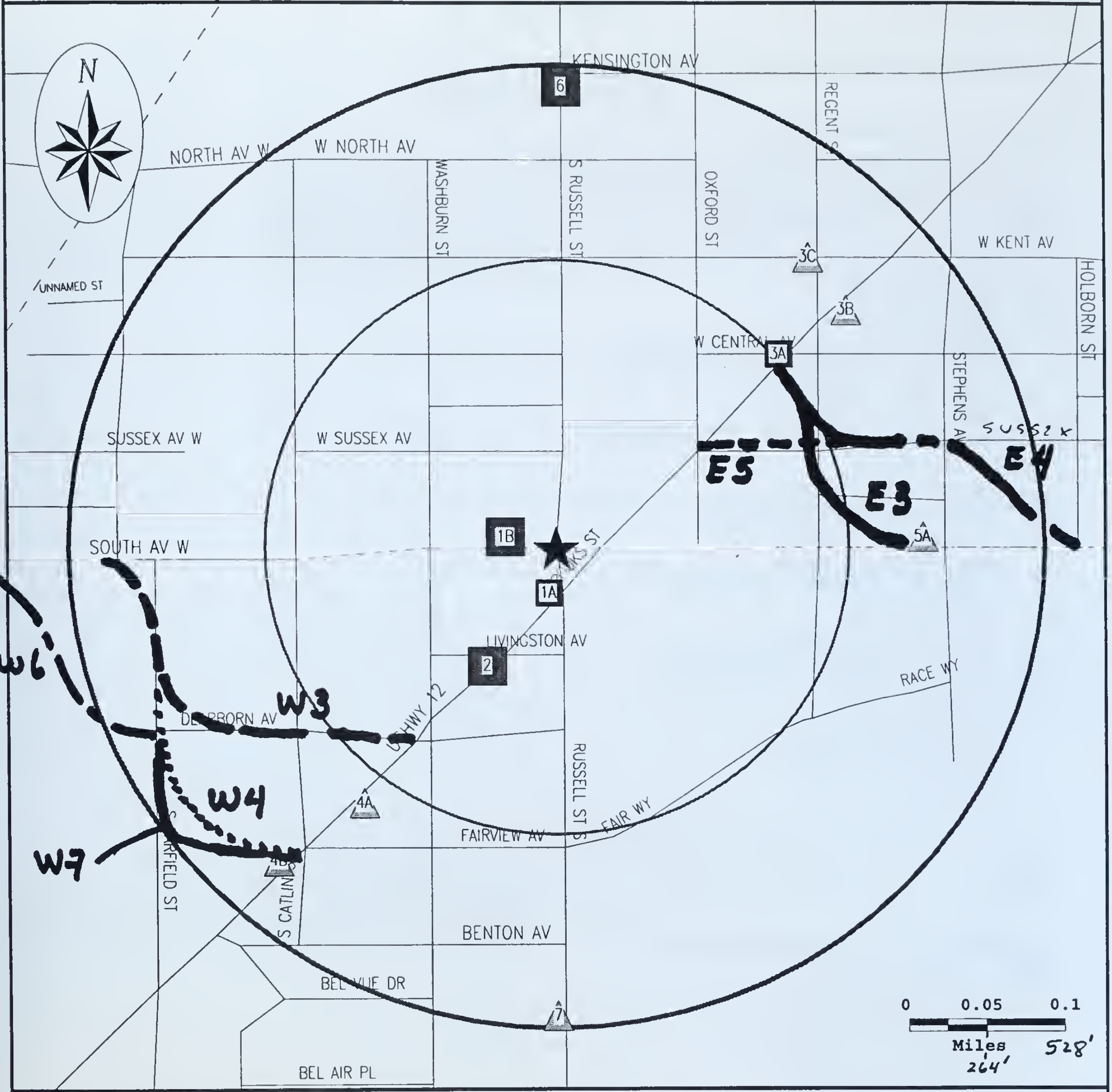
STATE UST - State Underground Storage Tank / SRC# 2261	Agency ID:	3-206942

Agency Address:	*SENTINEL HIGH SCHOOL* *901 S AVE W* *MISSOULA, MT*
Underground Tanks:	*NOT REPORTED*
Aboveground Tanks:	*NOT REPORTED*
Tanks Removed:	*NOT REPORTED*

Tank ID:	*NOT REPORTED*	Tank Status:	*REMOVED*
Tank Contents:	*NOT REPORTED*	Leak Monitoring:	*NOT AVAILABLE*
Tank Age:	*NOT REPORTED*	Tank Piping:	*NOT AVAILABLE*
Tank Size (Units):	*NOT REPORTED (NOT AVAILABLE)*	Tank Material:	*NOT AVAILABLE*

SITE ASSESSMENT REPORT
ONE MILE

Map of Sites within Quarter Mile



Subject Site	Category:	A	B	C	D
★	Databases Searched to:	1 mi.	1 mi.	1 mi.	1 mi.
	Single Sites	◆	■	▲	○
	Multiple Sites	◆	■	▲	○
		NPL, SPL, SCL, TSD	CERCLIS, LUST, SWLF	UST, GENERATORS	ERNS

Roads
Highways
Railroads
Rivers or Water Bodies
Utilities

$637' \times \frac{20\text{units}}{528\text{ ft}} = 24\text{units}.$

SITE ASSESSMENT REPORT
ONE MILE

SITE INVENTORY

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	A				B			C			D	
		NPL	TSD	SPL	SCL	CERCLIS	LUST	SWLF	UST	LG GEN	SM GEN	ERNS	VISTA ID DISTANCE DIRECTION
1A	BURGER KING 2405 BROOKS ST MISSOULA, MT 59801						X		X				4955550 0.00 MI ADJACENT
1B	U OF M - COLLEGE OF TECHNOLOGY 3639 SOUTH AVE WEST MISSOULA, MT 59801										X		5385737 0.00 MI ADJACENT
1B	MISSOULA VOCATIONAL TECH CENTER 3639 S AVE W MISSOULA, MT 59801						X		X				456016 0.00 MI ADJACENT
1B	MISSOULA VO-TECH CENTER 3639 SOUTH AVENUE. WEST MISSOULA, MT 59801					X							3405052 0.00 MI ADJACENT
2	BROOKS AVENUE DAIRY QUEEN 2515 BROOKS MISSOULA, MT 59801								X				5344036 0.03 MI SW
2	BROOKS AVENUE DAIRY QUEEN DOMESTIC WELL 2515 BROOKS MISSOULA, MT						X						2286221 0.03 MI SW
2	TLC CAR WASH INC 2500 BROOKS STREET MISSOULA, MT 59801								X				2279344 0.03 MI SW

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	A				B			C			D	
		NPL	TSD	SPL	SCL	CERCLIS	LUST	SWLF	UST	LG GEN	SM GEN	ERNS	VISTA ID DISTANCE DIRECTION
3A	CENEX SELF-SERVE-MISSOULA 1108 W. CENTRAL MISSOULA, MT 59801						X		X				2279887 0.13 MI NE
3B	P C WOEHR INC. 2130 BROOKS STREET MISSOULA, MT 59801								X				4955549 0.18 MI NE
3C	U.S. POST OFFICE 1100 W KENT MISSOULA, MT 59801								X				2281748 0.19 MI NE
4A	BROOKS STREET SINCLAIR 2650 BROOKS MISSOULA, MT 59801								X				2277496 0.14 MI SW
4B	MISSOULA NISSAN INC 2715 BROOKS MISSOULA, MT 59801								X				4953851 0.21 MI SW

X = search criteria; • = tag-along (beyond search criteria).
For more information call VISTA Information Solutions, Inc. at **1 - 800 - 767 - 0403.**

Report ID. **101564-001** Date of Report: **April 8, 1996**

Version 2 4 1